

THE

Country

GUIDE

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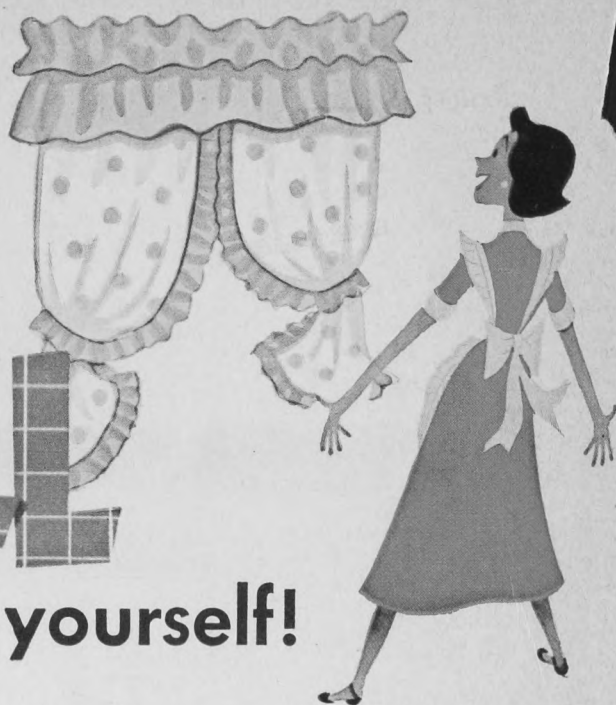
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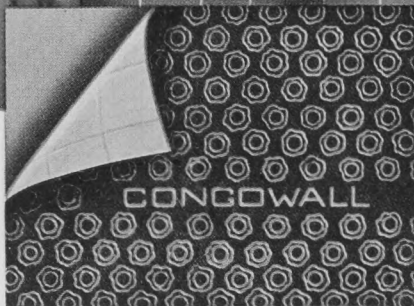
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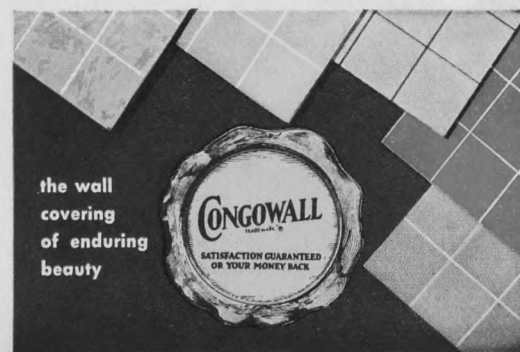
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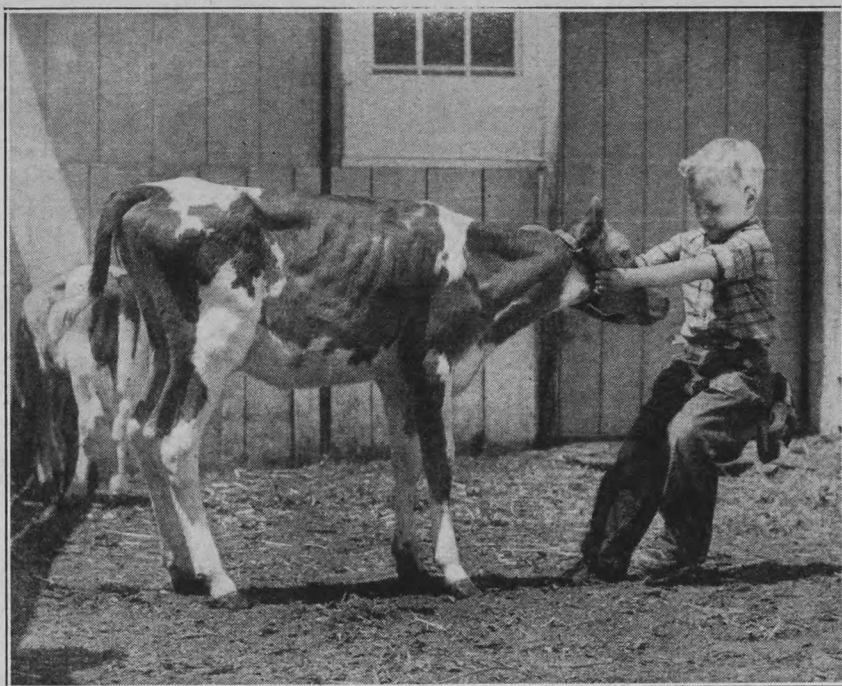
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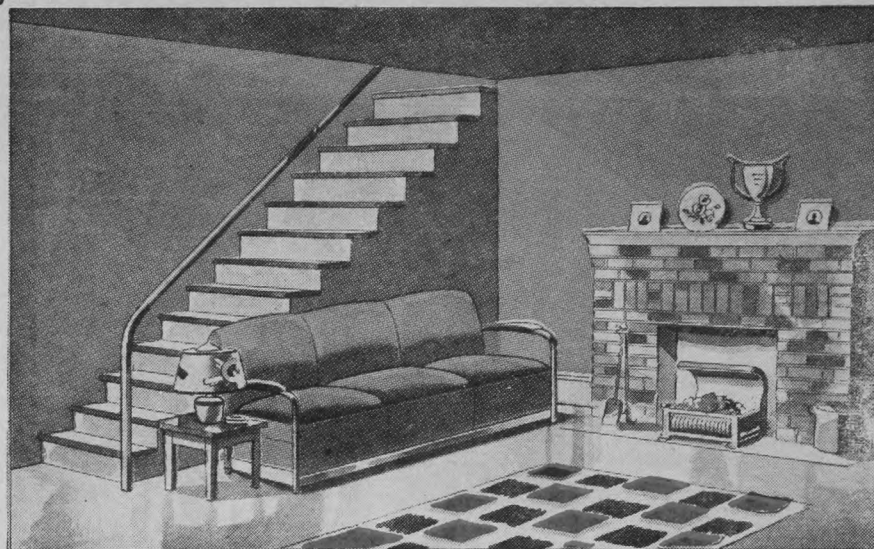
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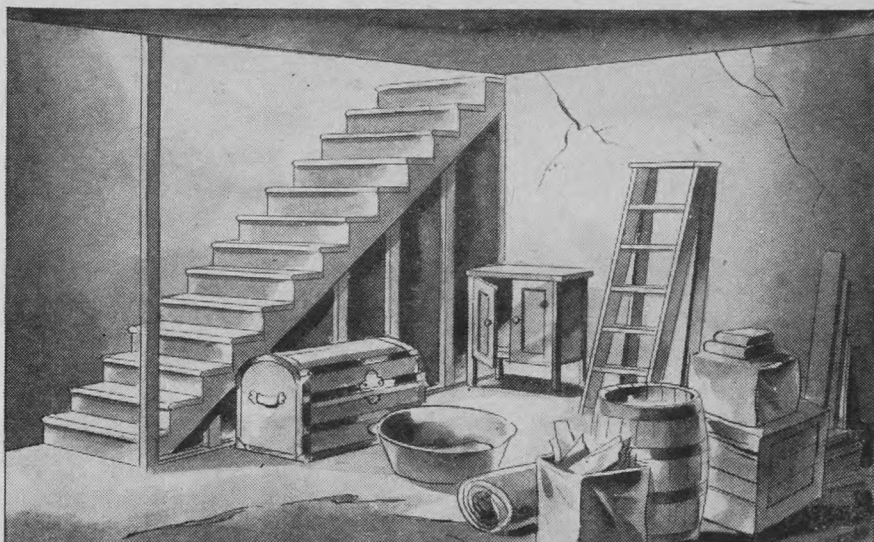
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BEST FOR ANY RUN IN '51

Under the Peace Tower

IN this corner, Mao Tse-tung. In the other, Hon. Paul Martin. That looks to be the picture right now.

This classic battle, waged with the fighters a mere 10,000 miles apart, is what will decide our fate in 1951. Let me explain, because in it are involved our budget, our old age pensions plan, our war policy, our everything. First of all, we had our faces all set for a big social security program this year. Canada was ready to give away, one way or another, an ultimate \$400,000,000 a year, for old age pensions, with or without the means test. This would of course be part of the price the people of Canada would have to pay to underwrite the safe return of the Liberals to power in 1953. It would also be a nice build-up for Hon. Paul Martin, Minister of National Health and Welfare.

So we were all set to shoot the works, when General MacArthur was talking of having the boys out of the trenches by Christmas. We were going to have old age pensions in the bag by Easter. Then the 38th parallel faded farther from view, and with it faded also our view of that sure-fire pension at 70.

Yet, the government felt that if it held off, long enough, the tide might turn. It had to decide whether it would be obliged to put every spare dollar it could into war, or whether it could peel off a few hundred millions to ensure a serene old age—and another Grit regime.

If you have studied the Commons this year, you will realize we could let the private members have a field day. That was because the government did not know what legislation to introduce. The thing to do was to stall. So we have the all but absurd spectacle of the Commons debating the evils of cigarette smoking, while the M.P.'s sat behind the curtains, inside the Commons—smoking cigarettes. Again, we had the delicious spectacle of the House giving quite a long time to the academic discussion of education, which is a provincial matter. Anything, everything, as long as it produced words. This was the policy. Say anything, do anything, as long as nothing is really said, and nothing really done.

THE government really did not know what Hon. Douglas Abbott, the Finance Minister, should put in his budget. Neither did he. So he managed to keep it dribbling along, till the word went he would bring down the budget just before parliament rose for the Easter recess. Then with a week to go before the mid-session vacation, Mr. Abbott said it would not be possible to introduce it till after Easter.

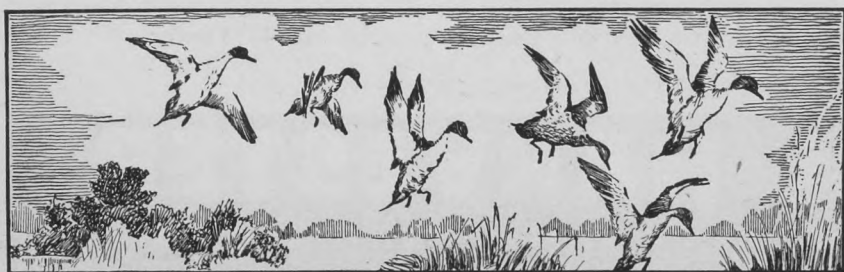
The opinions expressed Under the Peace Tower are those of our correspondent and not necessarily those of The Country Guide.



Although he did not say it, by that time, too, the war situation will be further clarified. Then again—and this is most important—Mr. Abbott will be able to see how he made out in the fiscal year 1950-51. The fiscal year ended March 31, of course, and he doubtless did have his experts right in there working their adding machines to the limit, computing the take. If, as suspected, he gets a whopping surplus (you, reading this after March 31 will know whether I am right or not) then he may be able to have his cake and eat it too. That is, he will be able to find the funds for his cold war, and then give Paul Martin his Easter present—better late than never—of the money required to start his old age pensions scheme.

THIS cake-and-eat-it-too policy depends, of course, on Mao and his Chinese Red "volunteers." The 38th line has been crossed so often that few can predict what will happen next. But it seems a reasonable bet that never again will MacArthur and his allies get caught with their pants down. If the North Koreans cannot be defeated at least they can be contained. Then if they can be contained, they may be ready to sue for peace. If they sue for peace, down come the war costs. Then up go the chances for more money for Paul Martin.

This, then, in essence has been the battle of the winter, Mao versus Martin. Time was the essence. If parliament could be kept doing nothing until spring brought us back to the 38th parallel, then it would be a great victory for Paul Martin. And anybody over 70!



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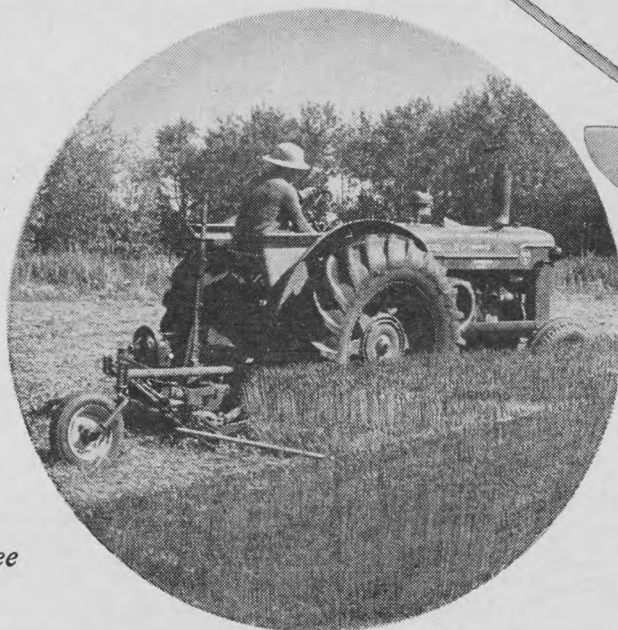
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CANADIANS became freight rate conscious in the summer of 1948. And with very good reason.

In October, 1946, before the deep freeze of the Wartime Prices and Trades Board had begun to thaw, the railways, anticipating a decline in traffic, and general price advances, filed an application with the Board of Transport Commissioners for a 30 per cent increase in freight rates. Nobody took much notice of it at the time because it was considered an excessive demand, no substantial portion of which would be granted. Nothing happened for 18 months. People took the delay as a confirmation of the general feeling of security against a steep rate increase. The public slept blissfully on, for there hadn't been a jump in rates since 1920 and Canadians had forgotten the impact which changes of this nature had on the pattern of the nation's business.

On March 30, 1948, the first of a series of bombshells dropped. The Board granted an increase of 21 per cent. The requirements of the railways, generously calculated, had been made almost the sole test of the fairness of the new rates. The reaction in the West was electric.

The federal government must have felt a little uneasy about the storm clouds of public opinion which began to gather, for within a week it ordered the Board of Transport Commissioners to undertake a general freight rate investigation. Some one had to be prepared to justify the rate increase on grounds other than the contentment of the railways.

Within a month the premiers of all the provinces, except Ontario and Quebec, met the government at Ottawa and requested an investigation by a Royal Commission, a request the government refused, after taking six weeks to make up its mind, on the ground that the general investigation which it had ordered on April 7 would provide all the answers.

With this disappointment fresh in the public mind, the railways applied for a further 20 per cent increase on July 27. Two days later the provinces gave notice that they had had enough. They filed a formal appeal to the governor-in-council against the 21 per cent judgment, and renewed their demand for a Royal Commission as being "the only means whereby a satisfactory solution of the larger problem of establishing proper principles for equalization" of rates could be found. They stated that the Board of Transport Commissioners "must break new ground" and asked for "a revision of the Canadian freight rate structure broader and more far-reaching than anything heretofore accomplished by the Board under the terms of the Railway Act." The language of the provincial premiers fitted the temper of the people they represented. They declared "that the general public had lost confidence in the Board's approach to the problem," and that "the provinces are not prepared to accept the Board as a tribunal for dealing with the broad questions which have been referred to it."

EVEN this sharp outburst failed to get early action. For ten weeks nothing happened. But the political winds began to blow. The Liberal party held a convention in August to get its house in order for the election which could not be long delayed. Six weeks later the Conservatives held a national convention also, at which they chose a new leader and contrived a platform designed to get them back into power. Both conventions, attended by party supporters from coast to coast, passed transportation resolutions which made it apparent that there was a real wave of hostility banking up.

Accordingly, on October 12, the federal government sent the appeal of the provinces back to the Board of Transport Commissioners for re-examination, and instructed that body to consider the 20 per cent application concurrently. On December 29, Ottawa capitulated to the reiterated demand of the provinces for a Royal Commission. Nine months of kaleidoscopic action and hardening resolves.

The choice of commissioners was particularly fortunate. Its chairman was Hon. W. F. A. Turgeon,

The Royal Commission on Transportation

a lawyer of renown, a privy councillor equally at home in the West or the East, and a man with previous experience as a Royal Commissioner. The two associate commissioners chosen were H. F. Angus and H. A. Innes, two eminent economists who have given special study to railway problems. The former is a professor at the University of British Columbia, and the latter at Toronto University. Dr. Innes has also written a history of the C.P.R.

The Commission immediately gathered about it an able corps of experts and began a series of public hearings that lasted over a year and took them from Victoria to St. John's, Newfoundland. The report released by the prime minister on March 15, 1951, fully justifies the hopeful expectations entertained by the provincial governments which pressed so ardently for it.

THE two central provinces made no presentation to the Royal Commission, even though their premiers were invited to do so. The operation of the horizontal increases in postwar rate making, and the many other discriminatory features of the Canadian rate structure have added to the advantages of geography, climate and the protective tariff which they enjoy. Why should they comment on the doctrine of giving to him who hath, and taking from him who hath not even that which he hath? Throughout its sittings the provinces of Quebec and

After a close study of Canadian transportation in all its aspects an eminent commission submits a report which will be hailed with satisfaction in the West

by P. M. ABEL

Ontario treated the Commission with "eloquent silence."

The complaints voiced by the Maritimes were many and genuine. Some of their major contentions present a marked parallel to those put forward by the western provinces. Considerations of space, however, require that these remarks be restricted to the viewpoints advanced by the western witnesses and the reception they met at the hands of the Commission.

At this point it should be said that all parties to the inquiry agreed that the C.P.R. should be the yardstick in the determination of rates, and that this railway must be allowed to make sufficient profits to maintain its properties and its position in the financial world. The case of the C.N.R. is entirely different. For political reasons it must operate lines that cannot be made to pay, and it bears financial encumbrances that make profit for the system as a whole unlikely except in the most favorable circumstances. Its deficit will be paid by the government which will also provide new capital when required. So the invidious job of devil's advocate falls on the C.P.R.

The first concern of the three prairie provinces was in respect to the Crow's Nest Pass rates. As

every Westerner knows, these are special rates governing the carriage of grain and certain grain products. They were initially granted by the C.P.R. in 1897 in return for very substantial assistance in building the railway line through the Crow's Nest Pass. Although the original agreement has been unrecognizably amended, the original rate on grain moving to Vancouver, Churchill and lake ports still stands, and alteration thereto can be made by parliament only.

The C.P.R. contends that the rates are so low that they are causing an annual loss of at least \$23 million, a disputed figure. As

a result, so runs their argument, other rates have to be jacked up beyond what would otherwise be necessary. Therefore, says the road management, the last vestiges of the agreement should be washed up, and the Board of Transport Commissioners should set a new and profitable rate for the outward movement of grain and flour. Had this been done in March, 1948, the general rate increase of 21 per cent need only have been 18 per cent.

THE C.P.R. attack on the Crow rates began before the Commission came into being. It put Westerners immediately on the defensive. They asserted, as they have on every occasion the Crow rates have been assailed, that this agreement is a feature of national policy enabling settlement of a great agricultural area further removed from its market than any other great surplus food producing area in the world. Under the assurance that the Crow rates provide, the grain growing industry has expanded and become an important part of the Canadian economy. If that assurance were suddenly removed, the dislocation caused would be disastrous to the West, and damaging to the rest of the nation. So say the farm organizations.

In retrospect the brief of the United Grain Growers proved to be of decisive importance in respect to the Crow rates. The Commission quotes from that brief with the observation that it is in agreement with it, and that this quotation summarizes the considerations which have come under review in arriving at conclusions. The quotation reads:

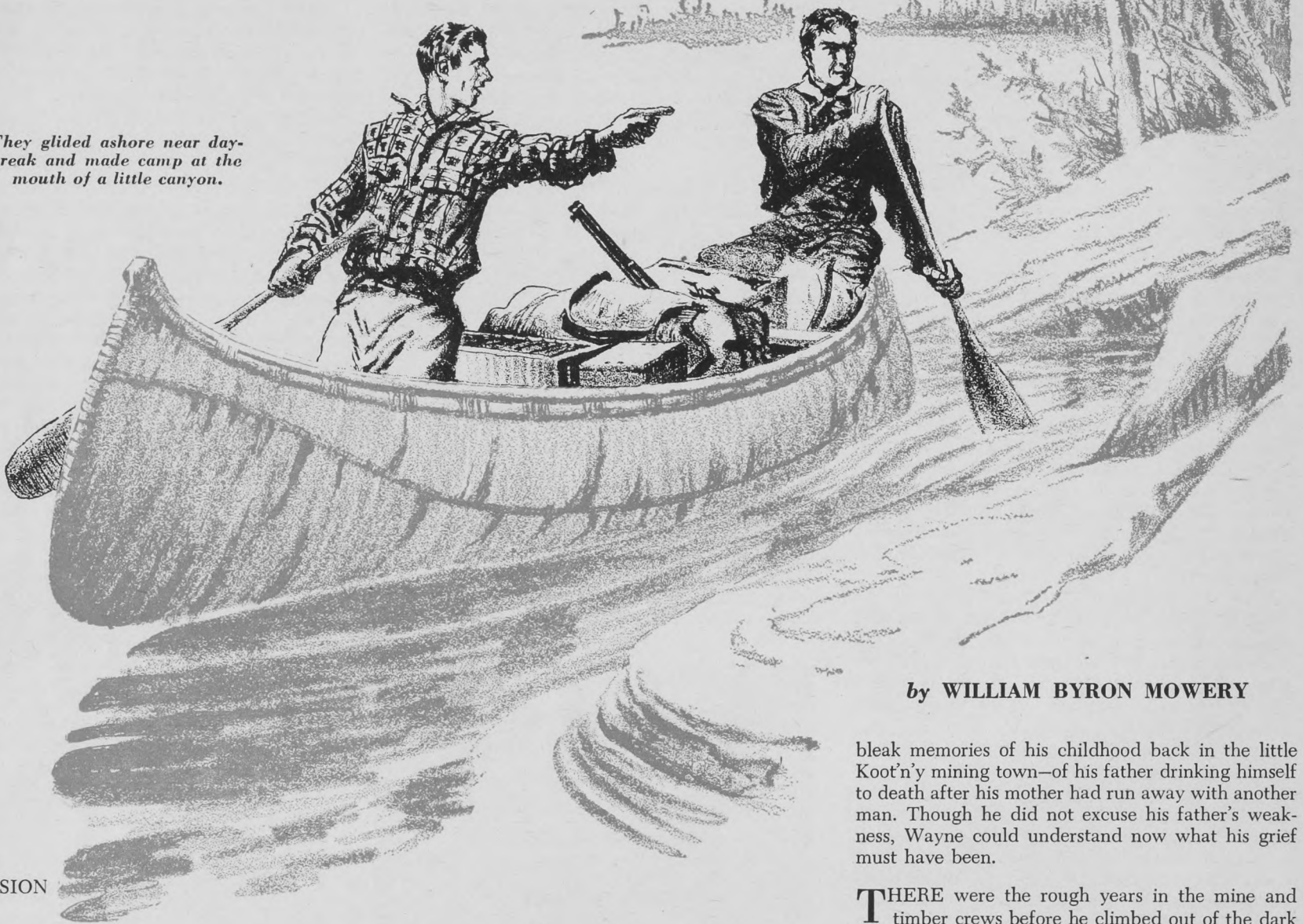
"Our position is that continued Parliamentary control of export grain rates in western Canada to the lakehead and to the Pacific Coast is necessary. That fact arises from the special nature of the business of growing grain for export and from its relation to the economy of the West and to that of all Canada. There are further important considerations, including the fact that the wheat-growing industry is vulnerable to world conditions beyond Canadian control. The grain rates in question are a direct levy upon the farmer which he is incapable of transferring to others. Those rates are not, and cannot be, held down by the influence of competition from other forms of transportation or by the influence of the principle of 'what the traffic will bear,' both of which are highly important in connection with other freight rates. The development of the grain-growing industry and of the Prairies generally has been a matter of continuing national policy. Such policy, first covered by a solemn contract, willingly entered into by Canadian Pacific, has been embodied in legislation passed and repeatedly confirmed by Parliament. To abandon statutory control and to place these rates under the jurisdiction of the Board of Transport Commissioners would be to prevent their regulation according to the principles of a national policy which has been the basis of the development of Canada for half a century."

The judgment of the Royal Commission on the Crow rates is a fearless and unmistakable endorsement of the case put forward by the western witnesses. "The Commission does not believe that the time has come to deal with this great export industry without regard to considerations which the Board cannot apply." And again: "The time has not come for parliament to divest itself of the control of these rates which it assumed in 1897. It would be against the national interest at this moment to subject this great export industry to the disturbance which abandonment of statutory protection would undoubtedly cause. There is no doubt that the

(Please turn to page 98)

The most Wayne could do was to realize that he had lost Nancy and resolve to forget her. After that notice posted on the mill door, he couldn't stay on at the mine. He and Jim were free to tackle the job they had talked about. Together they slipped away at night in a canoe, pointed up the lake toward the mountains

They glided ashore near day-break and made camp at the mouth of a little canyon.



by WILLIAM BYRON MOWERY

CONCLUSION

ALL that afternoon the scene in the office and the question of Nancy's choice throbbed in Wayne's mind. He wanted to tear himself away from work and find out what she had decided. But he was needed at the mill. Whatever his own personal troubles it had to hammer on.

While the drillers sat back at a safe distance and smoked, superintendent and tunnel-master labored for five hours at the ticklish job of firing an unexploded nitro blast. A single slip, or the unexpected, would have meant the death of both. When they succeeded near quitting time that evening, Wayne sent Jim to the cabin. He himself started for the mercury-distil, to finish that job so that retort could be heated the next day.

At the stamp-room he ran into a group of men spelling out a bulletin tacked up that afternoon. Their faces were long; they had no friendly greeting for him. He stepped up and read the typewritten sheet.

Above Nancy Arnold's signature was a notice that after the fifteenth of June wages would be reduced ten per cent.

Late that evening when the twilight was changing into deep darkness, Wayne found his way up the slope to the lightning-seared pine on the knoll.

He sat down at its massive foot and leaned against its shaggy, deep-seamed bark.

A thought flashed across his mind: he was like that tree—sorely stricken in its prime of life, desperately struggling to keep its vigor and raise its arms aloft in defiance of the elements.

The stars were dancing on the bosom of Lac Valleria. There was a light in Nancy Arnold's room, the room that he himself had made ready for her. The stamps had quieted down; the mine slept. From the flags at the lake edge came a chorus of "better-go-rounds" and shrill "knee-deeps." Farther out, a red-throated loon gibbered its weird night call.

On the lone pine knoll he seemed to be lifted up out of the tumult of emotions that had surged through him down below. He had found what he came seeking—the balm of a cool and quiet and lonely spot. He could think again, and see things clearly.

The last twelve years went past in solemn file. Only in two of them, the years of comradeship with Nancy Arnold, had he been happy. There were the

bleak memories of his childhood back in the little Koot'n'y mining town—of his father drinking himself to death after his mother had run away with another man. Though he did not excuse his father's weakness, Wayne could understand now what his grief must have been.

THERE were the rough years in the mine and timber crews before he climbed out of the dark and caught the vision of a brighter, higher life. Then restless ambition, the three brief years of sailing through the mining course at Eugene; his early work at the stamps around Juneau; the growing admiration of his brother engineers, the brilliant prophecies they made about him.

His inspection trip to Valleria, his meeting Nancy, his fateful decision to stay there.

At Juneau he would have been a part-owner by now, and consulting expert for a dozen mines. There was no self-esteem in that thought; it was sober fact. He was poorer by several thousand dollars than when he came. Money meant nothing. It was the precious wasted years that hurt. He had laid them as a sacrifice at a girl's feet. She seemed to him now like a beautiful melody that suddenly has taken on a tragic motif.

Toward midnight he heard someone coming up the slope. He knew it was Dorval before a voice called through the darkness. His partner sat down beside him.

"I thought I'd find you up here," Jim said after a few moments. "I've come here myself when things were blue."

"Why, Jim," Wayne remarked sardonically, "things aren't blue now! The mine is looking right up these days. We'll be able to finance their honeymoon in grand style."

Illustrated by Clarence Tillenius



The ARNOLD LEGACY

"I didn't mind working for Nancy's sake, partner," Jim went on. "I often thought what a time we four could have together when Nancy got back and I could bring Eleanor out. What hurts me worst is, Tregor'll get the benefit of all we've done. It must be that old Polonius' ghost is stalking around here, ordering things so that nobody'll be guilty of being happy. I can't see how else this could happen."

"But it's happened, Wayne," he added. "I've been thinking about it for two hours, and I can look it in the eye. Tregor has got Nancy, and I can't bring Eleanor out this summer. The only thing left is our partnership and the future."

"We're free now to tackle the job we've been talking about for three years. Suppose we do fail at that. Then we'll hit across to Juneau or up the Cassiar. We've got the whole footstool to roam over. You can't stay here—after that notice on the mill door. The quicker you get away and begin to forget, the better it'll be for you. You'll find yourself quicker, out in the woods. Shall I go down and pack the canoe?"

Wayne took his eyes from the solitary light in the Arnold house down below.

"I want a few minutes longer here alone, partner," he said slowly.

JIM vanished down the dark path. Wayne sat silent there a little longer. Into his mind flitted an expressive phrase from the Chinook—*kopet kumtux*—to cease to know, to blot a thing out of memory as if it had never been. In one hour he could not forget her; his love was the strong, mature passion of six long years. The most he could do was to realize that he had lost her and *resolve to forget*.

He got up presently, his eyes on the light down

below, but his mind back in a darkened cabin in the Koot'n'y years ago.

"If you were here, Dad," he said huskily, "you would tell me to put her out of my life and go ahead with a man's work. It is good advice. Anything else would lead—lead where your path took you. If I have strength, I will forget her."

At the cabin Jim met him.

"Everything is ready for us to start, Wayne. I knew what you'd decide."

They went down to the landing below the cabin. The canoe slipped out of the moon shadow of the shore hemlocks and pointed up the lake toward the mountains.

THIRTY-SEVEN miles north, they glided ashore the next morning just after daybreak and made camp at the mouth of a little canyon.

They set up their mosquito-proof tent, built a small stone furnace at the flat-front, lopped off a few spruce limbs to spread blankets on, and dug a basin where a trickle of water came out at the foot of the ledge.

While Jim was fitting a rod together to whip some bass out of the shore flags, Wayne glanced through the pack and found his bird-glasses. Of the hundred things which his partner might have brought instead, the glasses were what Wayne wanted the most. Always thoughtful, Jim had guessed his sore need of being alone and quiet in the mossy woods.

Thereafter Jim quietly took care of camp and cooked the meals. Very wisely he tried no hollow comforting. He spoke little, and did not once mention the purpose that had brought them there. Wayne was thankful for his silence.

He set himself grimly to the battle. He must put his love for Nancy completely behind him. He must deliberately extinguish every spark of affection for her.

There were black hours when he thought he could never shuffle off his love for Nancy. There were times when he had to meet and conquer the weakness that his father had fallen to, times when the temptation to go back to Valleria, to be near and see her, was almost more than he could bear.

Each morning while the chitter squirrels were still on their den trees, and a smoke curled up from the lake water, he stalked away from camp like a ghost in the grey light, and headed back into the lonely mountains. Through the long twenty-hour day, sometimes through day and night together, he wore out his powerful body by merciless roaming, so that rest would be welcome.

Some days found him threading the stair-step mountain streams, where the water-ouzel fed in the depths of boiling cascade pools. Other times found him above timberline in snow fields, where the grey-crowned finches nested, and the golden eagle had his eyrie.

Siam-siam, the grizzly, lumbered past him in the mossy forest, crashing off when it caught his scent. Deer flushed in front of him and glanced into cover of the nearest back-brush. Above timberline he saw the big horn pasturing his seraglio on the heather terraces, while *hyas puss-puss*, the panther, licked his chops on a ledge above them.

Wayne watched himself, as if he were some impersonal thing, analyzing the subtle, powerful influence which the wilderness had on him. In strange bird and flower there was a moment's distraction, a certain cheerfulness in the warbler's song. But the big influence lay deeper than that.

With his own life at a standstill and his world turned upside down, it came home to him how steadfast Nature was—one certain, *inexorable* thing in a universe of uncertainties. Day after day, taking storm and sunshine alike, she marched along with mighty tread. In the face of that steadfastness, his own grief seemed small and inconsequential.

He should go on with a man's work, fulfill his destiny, turned aside by neither sorrow nor gladness.

Gradually his restless energy began to awaken. His body toughened again; the signs of overwork and worry left him. Six years seemed to roll off his shoulders, now that he was free from the Arnold mine. He no longer sat out the brief nights at the lake edge alone. He went hunting and fishing with his partner and laughed again.

Kopet-kumtux—he had ceased to remember!

After three weeks of camping at the canyon mouth, Dorval judged that the time had come. One morning at breakfast he broached the purpose which had brought them to that particular spot.

They were setting themselves to a quest which had baffled a score of engineers and roving prospectors. Both of them were well equipped for the job, bringing a working knowledge of geology and chemistry and other sciences to the task. They were by easy odds the best pair of men who ever had tackled the problem, and they were true prospectors in believing they would win where others had lost.

"Suppose we sail into it today, Wayne?"

"I'm ready."

"I've scouted around a bit this last week. The canyon walls are nice to work on, and I located a couple of bad landslips that read like a book."

"Did you find the formation we're looking for?"

"That's the trouble. I found it everywhere. It comes right up the east range. If it occurred only in a couple of places, we could try 'em out; but there's a fourteen-foot stratum of hard rock covering that formation. We can't dig many holes through that."

"Did you find any iron, Jim?"

"Not a trace anywhere. What's the idea of iron?"

"Well, iron lies just under the gold vein at the Arnold mine, and at a few other old ones that are deserted. I'm guessing it does up here, too."

"That doesn't do us any good," Jim commented. "If the iron lies under the gold, we'd have to find the gold first anyway."

THE point is, Jim, we can't go digging into these rocks every few jumps. There's fifty square miles of country here, we'd locate that lode only by a *chechahco* miracle, and miracles are poor things to bank on. We've got to locate that vein by sinking three or four holes at most. The iron will help us do that.

"If you won't laugh before we give it a fair trial, I'll tell you an idea I've been thinking over. An old sourdough across at Treadwell told me about it. I thought it was a plumb *pelton* idea at the time, but since then, I've seen several instances where it seemed to hold water."

"Shoot!"

Wayne explained.

"It surely sounds crazy," Jim commented. "But if you say so, we'll give it a whirl."

They buckled on their light tump-packs, took blankets and a few cooking things, and set out up the canyon.

In the next week they returned only once to camp. For eighteen hours each day they kept hard at work, stopping to fish and cook when they got hungry, and sleeping wherever darkness found them.

Their first step was to chart a strip of country

five miles wide and ten miles long lying along the eastern shore of the lake. They marked in the canyons, hills, streams and formations. With these twenty sheets to work on, they started up at the north end of the strip and began jotting down on the maps the signs which Wayne had said to look for. Each sign was represented by a dot.

When they had finished that job and came back to camp, Wayne spread the sheets on the moss and pinned

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The grizzly lumbered past in the mossy forest, crashing off when it caught his scent.



Lucy came in. She had been down to the mailbox. She had a letter and was tipping it to her pink cheek.

He came in and stood for a minute, looking at my mother who was busy peeling some apples on the porch.

"How's Mr. Whitmore today?" my mother asked.

My father did not answer her directly.

"Look!" he said, and when she glanced up he patted his side coat pocket.

"What is it?" she said.

He drew from his pocket a folded paper that looked to me like it was real old, for it was yellowed and frayed a little at the edges.

"The deed," my father said. "He has practically agreed to sell out to me for only \$3,000, lock, stock and barrel . . ."

"Sounds like a bargain," my mother said. "In fact, I should say the place is worth more."

"It is going to be one of the best deals I ever made," my father boasted, and his chest was swelling out. My mother turned and resumed her apple peeling, and knowing as I did that my mother had been telling everybody that we were going to build us a new house with this \$3,000, I could not understand just then what was delaying the fight between my mother and father.

At this moment, my sister, Lucy, came in, and I knew she had been down to our mailbox at the highway, for she had a letter, and she was tipping the letter to her pink cheek. From her pink cheeks, I knew who the letter was from. It always turned her cheeks pink to get a letter from Johnny

Whitmore, who was off in College.

I was only ten years old, and my sister, Lucy, was eighteen that year. Two years before, she had graduated from high school with Johnny Whitmore, and both Lucy and Johnny puzzled me that last year in high school. They both practically quit me. Johnny took to carrying my sister Lucy's books. He puzzled me there. He did not carry her books when she was little and wading the deep snow to school, but after she got big and strong and did not need any help, he helped her, and it all sounded foolish to me.

Besides, of Sundays, he would come by our house and walk with our Lucy to church, but he never would come in our house. He would only venture up in the yard and Lucy would brush off the green bench out under the apple tree.

Once, I asked my mother what it all meant. I did not want to ask Lucy, for she would only snarl at me and tell me it was none of my business, which in a way it wasn't. But my mother would be more reasonable.

"If Johnny Whitmore likes our Lucy so well," I asked, "why don't he come on in the house? Why don't he marry her?"

My mother said that boys of ten years could not

be expected to understand such things. She said I would catch on as I grew up. She said people didn't just up and get married. She said such things came slow and gradual, and then she said it would last forever like the breezes in the pine trees.

But it didn't make much sense to me. I just knew that this letter Lucy was tipping to her cheek was from Johnny Whitmore. She did not stop to tell us about it. She zipped past where my father was starting to read the boundaries of the Whitmore farm to my mother from the deed.

My mother listened to the boundaries without comment, but my father commented.

"While I go to have a deed prepared," he said, "I think we should give Mr. Whitmore some encouragement so as to make sure he stays in the notion to sell."

"Oh, yes," my mother said, "we must keep him in the notion. Why couldn't I stop up there and take him something good to eat?"

"Fine," my father said, and then turning to me, he said, "And you, Alec. You can go along and get the old man in some wood. That rheumatism has practically got him down."

My father left then to go off to town to get a deed written, but called back over his shoulder to my mother.

"Tell him how glad you are to get the place, and encourage him all you can."

MY mother assured my father she would be glad to do that, and I wondered. I knew my mother did not want to invest our lifetime savings in more land. I knew that regardless of how it looked just now, that she was planning some kind of painless battle. She was fixing, so to speak, to stroke my father's fur the right way so as to have him purring at her feet once again, and the outlook had a thrill for me, because, quiet as it all seemed, I knew my father and mother were locking horns.

After my father got away, my mother hit the stair steps. She went up to Lucy's room where Lucy kept her letters hid in a little cedar chest where none of us could read them. I heard my mother and Lucy holding a whispered conversation. Something told me this was battle strategy, but I could not hear their words.

My mother came back down and fixed a box of things to eat. She sliced a chunk off the Sunday cake and put in a cherry pie; then she called me to come on.

I wanted to discuss the matter.

"I thought you was gonna build us a new house with our \$3,000," I said. "Why are you helping father to buy this place?"

She did not answer just off, but after a little she put her hand on my bare head.

"Alec, honey," she said, "I have never crossed your father. I do not intend to now. I am only allowing nature to take its course."

I did not question my mother any more. It was no use. After she got off on to nature, and things eternal, she always got beyond my comprehension, and I tried to forget it for the moment.

When we got there, Mr. Whitmore was in his big arm chair by a dwindling fire, and he said he was real glad to see us, and spoke of his knees hurting, and rheumatism in his



right hand.

"I'm so glad you're selling your place to us," my mother said. "I brought you a few little things to eat."

She spread the pie and cake in front of Mr. Whitmore, and he took a piece in his left hand.

"Well," the old man said, "I'm mighty glad to hear you say that, Amy. Joe was just a little afraid you would not want to make the deal."

"Oh, I couldn't stand for anybody else to have the place," my mother said, and then she studied a while.

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Peace in Our House

I wondered about the difference in the things my mother saw and the things my father saw, particularly when he asked her to encourage Mr. Whitmore in selling his farm to us. I had to watch and wait

by MARK HAGER

Illustrated by J. H. Petrie

SOMETIMES I think it was fortunate that my father married my mother. They were so opposite.

I remember the things I learned from each of them.

My father was husky, big, impetuous and strong, with considerable temper, but he taught me how to fell trees, wield the axe, and swing over the moldboard on the big turning plow.

My mother was a frail, thin little slim woman, but she taught me what was back of the smile of a baby or the smell of a blossom.

And with all my mother's frailness, she knew so well how to handle my father. She did not fight back at him by rubbing his fur the wrong way. She gently stroked it the right way, and a moment after he had thought of himself as wielding a broadaxe, she would have him purring as gently as a kitten.

Take the time our neighbor, Mr. Whitmore, took a notion to sell out to my father.

"Now's the time to strike while the iron's hot," my father said, and by that he meant while Mr. Whitmore was stricken with rheumatism, and his only son, Johnny, off in school, and the old man Whitmore also suffering of loneliness. Father went often to see about Mr. Whitmore, and one day he came back all smiles and whistling. My father never whistled except when he was about to wield a broadaxe, so to speak.

FOR our purpose, research may be defined as the steady, purposeful study of a problem, by use of the methods of science. Some research is referred to as "applied" and some as "fundamental." This distinction may be justified to some extent, but there is a large area of study in which such distinctions become quite obscure. In this article the term "research" will be considered to mean the thorough study of problems by the scientific method.

Most farmers are very much alive to the question of agricultural research. As taxpayers, they, along with other citizens, contribute to its support, and they may sometimes wonder about the results they are getting for this support. From the farmer's viewpoint a comparison of farm practice today with that of 20 or 30 years ago may point to some of the answers.

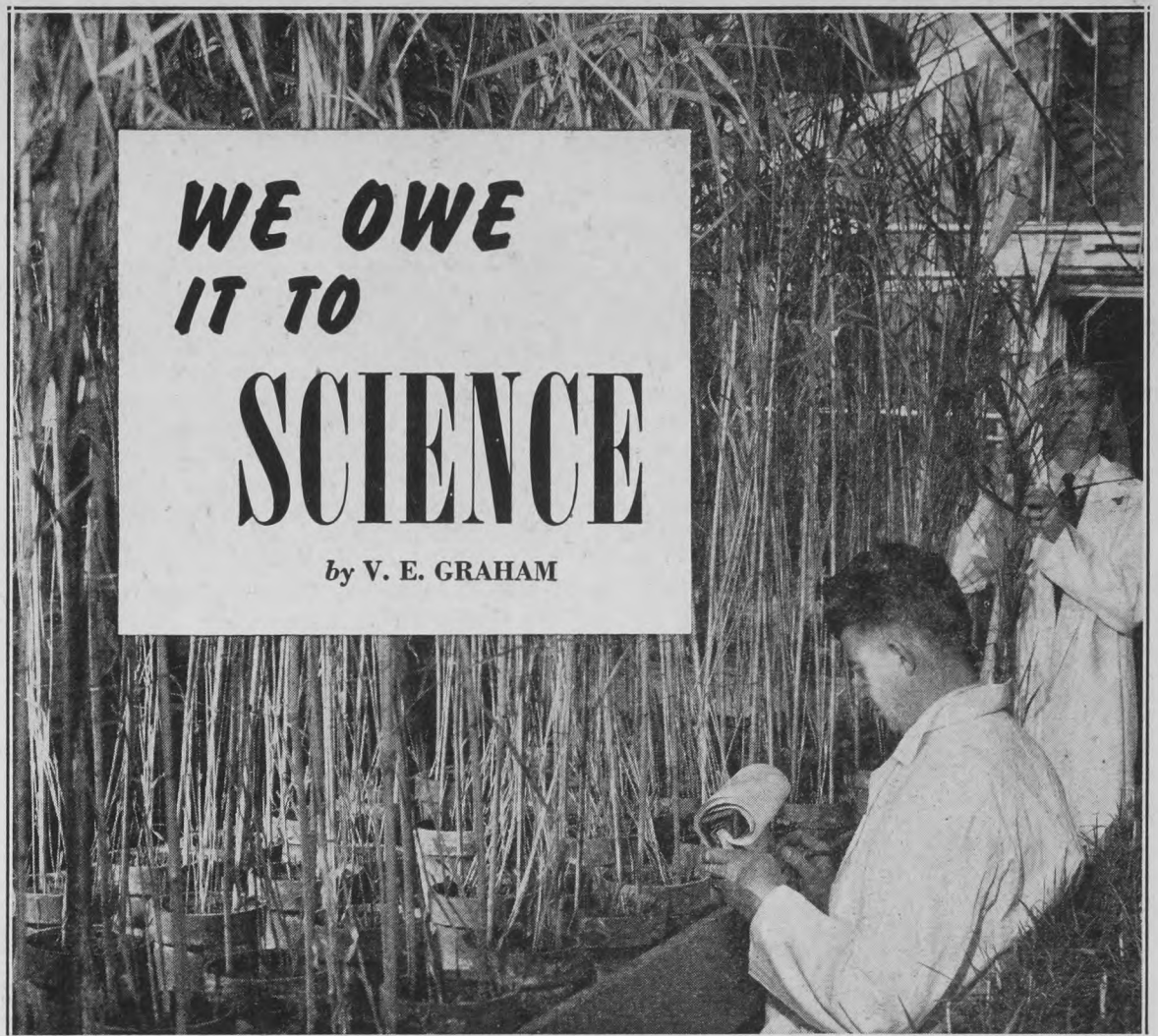
Assuming that you live in Saskatchewan, you did not sow the same variety of wheat in 1950 that you sowed in the 1920-30 period. Of the varieties of wheat recommended in 1933, not one was on the recommended list for 1950! Thatcher, the most commonly grown variety in 1950, did not appear until 1936. Varieties such as Apex, Rescue, Saunders, Redman and others, did not exist even 15 years ago. Marquis, which is still our standard for milling quality, now occupies only a small part of the wheat acreage of western Canada. And Red Fife, the variety which was most popular until 1916, is as dead as the dodo, except for small stocks in the hands of the plant breeders.

What happened? Red Fife was too late in maturing and was hit by frost. Marquis was early, but it was susceptible to stem rust.

A fortunate and impressive combination of research workers attacked the stem rust problem, and rust-resistant varieties of wheat were quickly produced and distributed. We know, of course, that the problems of frost and rust have not been entirely solved. It is certain, however, that many thousands of farmers would not be growing wheat today, if earlier maturing varieties had not been made available by the plant breeders. As far as stem rust is concerned, the problem has been solved partially; a breathing space of about 15 years has been provided. The rust threat may only have been repelled, as the appearance of strain 15B indicates. In military terms, it may be said that we have been maintaining an armed truce, with the spies reporting that the enemy is about to launch a new offensive. If we are to maintain or improve our position, this will only come about through the continued activity of researchers in this field.

A similar story can be told of other crops. There is not a single variety of flax on the recommended list today that was there in 1933. All are new, all have been produced by a mere handful of plant breeders, and their work has meant many dollars in the bank account of every flax grower. Likewise the leading varieties of barley in western Canada today, with the exception of O.A.C. 21, were unknown 20 years ago.

LET us take a look at another farm operation, that of seed treatment for the control of wheat smut. Twenty years ago the only successful methods



WE OWE IT TO SCIENCE

by V. E. GRAHAM

known were the use of formalin, or copper sulphate. These were succeeded by the mercurial dusts, and still more recently by wet treatment with mercurial compounds. The substitution of mercury compounds for formalin eliminated the adverse effect of formalin on germination; and has had some effect upon the amount of seed required. This change was brought about by agricultural chemists, plant pathologists and agronomists. More recently, the plant pathologists have found that if wheat is entirely free of smut spores it doesn't have to be treated at all. This has resulted in a saving of both labor and chemicals.

What has happened to harvesting methods in the past 30 years? In 1920 the combine harvester was, for the most part, just a dream. The wheat crop of western Canada was harvested by the combined efforts of horses, binder and driver, stokers, bundle teams, stook pitchers, tractors and threshers. This meant that every kernel of wheat was handled four times before it reached either the wagon or truck that took it to the elevator, or the granary in which it was stored.

The thoughts of farmers and scientists turned to the problem of reducing the time and effort required in grain harvesting. It is only natural that they should have thought first of the stooking problem. This was an expensive and laborious operation. The second expensive and laborious operation was that of loading the sheaves onto a wagon and throwing them into the threshing machine. These two problems, stooking and loading of bundles on wagons, are mentioned together because they were attacked almost simultaneously. Mechanical stokers were invented at about the same time as mechanical stook loaders. Both of these became obsolete very quickly on most western farms, because the combine was developed so rapidly. Where the combine can be used it has superseded the binder, the stoker, the bundle wagon, the stook loader and the threshing machine. Due to climatic and other factors the combine cannot be used in certain areas. Nevertheless the use of the combine has reduced harvesting costs in some areas of the plains by one-third or one-half.

Soil is the ultimate foundation for an agricultural economy, and soil and

climate determine whether agriculture can be carried on successfully in any given area. In this respect, too, our scientists have been alert. The soil surveys, which have been carried out in all parts of Canada, have been a great help to governmental agencies in working out general land and land settlement policies. Most of the early settlers in the West took up land wherever land was to be had, regardless of its quality for agricultural purposes. Under these conditions many mistakes were made, which was inevitable. There were no soil scientists to evaluate the land before it became a farm.

LAND settlement policies have now changed. In western Canada, for the most part, land is not now opened for settlement until it has been approved by certain boards or other agencies. On these, the soil scientists and farm management experts play a leading part. The activities of these agencies protect the prospective farmer against loss of time and capital in cultivating land that is unsuitable for farming. One of their major problems has been the resettlement of farmers who had occupied unsuitable land in the first place.

Land classification has been only one of the important contributions of the soil scientist. Fertilizer studies, of both a theoretical and practical nature, have come in for their share of attention. This type of work must continue almost indefinitely because of changing conditions, both of soil and of types of fertilizers available. In any particular year, under any particular set of circumstances, the soil scientist is capable of giving a farmer sound advice regarding the use of fertilizer.

The contribution of the soil scientist to land settlement policies is particularly important with respect to the development of irrigated areas. The feasibility of an irrigation plan does not depend entirely upon finding a source of water and a tract of land upon which it is possible to have that water flow. Extensive studies have shown that water, improperly used, or used to excess, will quickly ruin certain types of soil, either by leaching or by excessive accumulation of salts. Irrigation is not just an engineering problem. In some respects, the engineering problems in connection with an irrigation scheme are less complex than the agricultural and economic problems.

Finally, the soils men have prepared detailed maps which show the exact nature of the soil on millions of acres of

Soil, crops, varieties, machinery, diseases and pests, research has affected all of these farm problems to our benefit



[Cereal Breeding Lab. photos.]

Dr. R. F. Peterson, in charge of the Cereal Breeding Laboratory, Winnipeg, crossing wheat.

(Please turn to page 46)

WESTERN Canada has now had a half century of experience with irrigation, most of it in southern Alberta and British Columbia. An abundance of water has made Lethbridge a thriving, wholesome city, in the center of a prosperous territory. It has created prosperity for a dozen or more smaller centers. It is responsible for Alberta's substantial sugar beet industry, and for her newer canning crops industry in the Taber-Barnwell communities. Many years ago water made of alfalfa a major crop in the Lethbridge area, leading eventually to the creation of one of the most intensive livestock feeding areas in Canada.

Lethbridge is close enough to the Rockies to benefit directly from the several small rivers which carry the mountain waters eastward until they join together as the South Saskatchewan River. The Waterton, the St. Mary, the Belly, the Oldman, the Little Bow and the Bow helped to make southern Alberta ideal for ranching. The harnessing of their waters for irrigation purposes automatically created a garden out of a semi-arid country.

Irrigation is invading more and more dry land farms where the search for security of food, feed and seed goes on year after year

and portable irrigation piping, coupled with the improvement of sprinkler heads. As a result, in the province of Alberta, where there were only two large field sprinklers in use in 1948, one agency alone was reported to have distributed over 100 sprinkler units in that province in 1949, and doubtless a much larger number in 1950. In Saskatchewan, last August, the best estimate I was able to obtain of the number of sprinkler installations by the five major distributors operating in that province was between 800 and 1,000. A recent estimate suggests 1,500 now in use in the prairie provinces. Most of these, no doubt, are small "package" outfits, suitable for orchard and garden or for emptying a slough in spring. Many of the systems were, no doubt, purchased without sufficient prior study and information.

(two or three out of five) may be insufficient to supply the crops when and where needed; and (3) unless the cost is estimated carefully, and the system managed efficiently, increased yields secured may not make the investment profitable.

It is generally agreed that flood irrigation is greatly to be preferred, on the score of cost, wherever it can be applied. In many areas flooding is only feasible during the period of the spring run-off, and is generally applicable only to land which is level or can be levelled at relatively low cost. It requires greater water supply, and because it works by gravity, can only be most efficient in the conservation of water, when applied in an organized irrigation community, properly laid out with an efficient system of canals and ditches, designed to minimize waste. A sprinkler system, on the other hand, can be used on uneven or sloping land.

THERE are many variations of irrigation by gravity. One of the simplest I have seen was on the farm of Henry Behrman, Vidora, Saskatchewan. Mr. Behrman operates five sections with his sons, but said that because the rainfall is so uncertain, he would rather raise livestock on 150 acres with water than to raise wheat from the large acreage he now has. Last spring there was as bad blowing as he had ever seen, with the result that he had one whole section in weeds, and up to late July hadn't done anything with it, because he didn't know what to do.

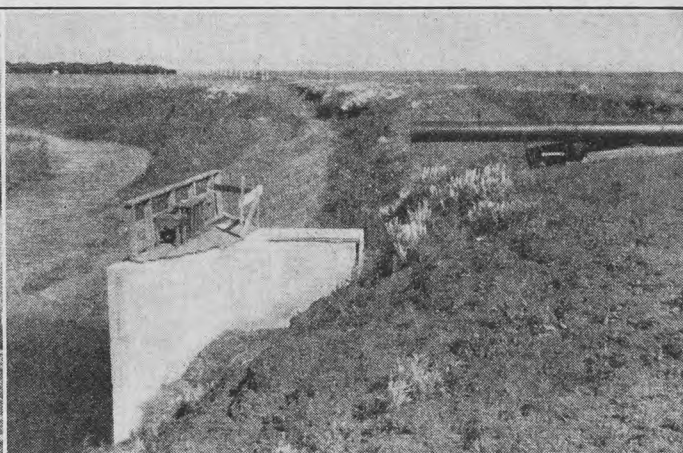
He has about 100 acres he can now flood-irrigate, but has difficulty in getting enough run-off. He wants to build up a heavy feed reserve and raise more cattle, perhaps 75 head at home and an additional 150 or 200 head on leased land, or community pasture. He has had an artesian well for years, and would like to develop underground water for irrigation. The P.F.R.A. had a test on the farm and drilled down 140 feet to the bottom of a 15-foot gravel bed, since which there has been a flow of about 50 gallons

Below: Henry Behrman, Vidora, can store water from this artesian well for flood irrigation.

Left, below: This dam at Woodburn stores run-off water for half a dozen farms.



Above: F. W. Roberts, Cadillac, pumps from Notikeu creek for gravity irrigation. Right, above: On this Rouleau, Sask., farm 500 acres of wheat were flood-irrigated.



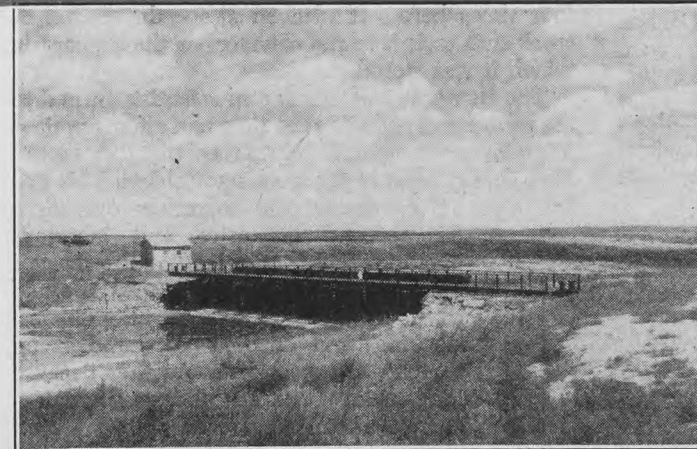
Manageable MOISTURE for Dry Land

Gradually the idea of using irrigation eastward on the prairies has taken hold. Indeed, what was perhaps one of the first irrigation projects in Saskatchewan, was begun as far back as 1907, when what was known as "The Spangler Project," now owned and operated by the Saskatchewan Department of Agriculture, was begun with water from Lodge Creek. Though the memorandum for the original water rights was dated June 8, 1907, it was not until April 6, 1915, that water licence No. 9 was granted, which permitted use of the Lodge Creek water for irrigation purposes. The system built by Mr. Spangler was, according to the Saskatchewan Department "a monument to his careful planning and almost limitless capacity for hard work. The miles of supply canals, main irrigation ditches and field ditches were built with the aid only of horses and scrapers."

TODAY there are thousands of dugouts, hundreds of irrigation projects (most of them small) and scores of stockwatering dams and reservoirs in Saskatchewan alone, nearly all of them developed during the 16 years since the Prairie Farm Rehabilitation Act was passed.

For a time, P.F.R.A. was the only agency in the field able to render any assistance, and its personnel and facilities could be stretched only so far. Today, the Saskatchewan Department of Agriculture, which did not have a single land and irrigation engineer in its employ in 1946, expects to have a staff of 90 operating this summer on land development projects, of whom 31 will be engineers.

The appeal of water has, however, received a strong fillip during the last three or four years, by the introduction of lightweight, quick-coupling



There are a number of reasons why sprinkler systems should be purchased with caution, but chief among them perhaps are these three: (1) the cost of putting an inch of water on an acre is likely to be from five to ten times the cost of flooding it on; (2) few farms are located alongside an inexhaustible supply of water, and unless engineering advice is sought, the water supply in crucial years

per minute. He thought he could probably pump a thousand gallons per minute and get enough water to put six acre-inches over 240 acres in three weeks' time. He has a reservoir and, therefore, could be storing the water in the reservoir for flooding, as required. At present, he is planning this water development only as a supplementary supply. One of the difficulties he may be faced with is that the soils men are afraid the sodium content of the water from the artesian well may ultimately spoil the land.

This farm illustrates the uncertainty of paying crops in semi-arid districts. Since 1920, when the farm was purchased, (Please turn to page 28)

by H. S. FRY

[Guide photos]

THE first experimental work with crop rotations was started at the Rothamsted Experiment Station at Harpenden, England. Detailed records were kept and they reveal that over a period of 85 years (from 1855 to 1939) the average yield from continuous wheat cropping was 10.7 bushels per acre. From a wheat, summerfallow rotation it was 14.5, and in a summerfallow, wheat, turnips, barley rotation the wheat yielded 22.7 bushels, a very significant increase.

The oldest crop rotation experiments on this continent were carried on at Urbana, Illinois. They have continued since 1876. The record of the 12 years from 1931 to 1942 revealed that unfertilized, continuous corn yielded 26.0 bushels per acre. A corn, oats rotation yielded 33.5 bushels of corn and 36.4 bushels of oats. A corn, oats, clover rotation yielded 43.2 bushels of corn, 59.1 bushels of oats and 1.26 tons of clover. The yield of the unmanured, continuous corn decreased rapidly during the first few years of cropping, after which the decline was very much retarded. With the two-year rotation of corn, oats, the decreases were slower and smaller in amount, and with the three-year rotation of corn, oats, clover, decreases were still less.

These experiments serve to indicate that crop rotations alone will not prevent a decrease in crop yields, but will reduce these decreases, and will postpone for many years the time of serious soil impoverishment.

WORK done under irrigation at Huntley, Montana, points up the value of rotations even more forcibly. Oats grown continuously yielded 31.4 bushels per acre; when this crop was manured the yield rose to 56.2; when it was alternated with wheat without manuring the yield declined to 44.5 bushels. When it was grown after alfalfa the yield rose to 99.9 bushels, three times the yield of continuous oat cropping.

Similar results have been achieved very frequently in Canada. This is not to say, of course, that the addition of non-cereal crops to a rotation will necessarily increase either yields or net returns. Costs are often higher, and quite often yields are not increased. The fact that short rotations which include only cereal crops are very popular is an argument in their favor; the argument must, of necessity, center around whether or not their advantages will outweigh their disadvantages. It is often argued that more money can be made if the farmer

Many factors, including soil type, rainfall and topography influence the choice of a rotation

AT least four advantages are popularly claimed for a rotation that includes legume or hay crops. The first of these is the prevention of soil erosion by wind or water; the second is the maintenance of the physical structure of the soil; the third is weed control and the fourth is the maintenance of soil fertility. Added together these provide a further point, which is increased long-run yields.

Accepting these arguments there are some points to be considered before a rotation is adopted. The first is whether or not the farmer wishes to raise livestock. If he does not it may be hard to justify raising hay or legume crops. The second decision is whether or not there is any likelihood of getting a good catch with grass or legume seed. A forage crop failure not only disrupts the cropping sequence but will seriously reduce needed feed supplies.

Authorities at the Brandon Experimental Farm advance a number of points to be considered before anyone starts into a crop sequence that is even one step removed from a straight grain rotation. The location of the farm in relation to markets is an important consideration in choosing the crops to grow, and farm size, soil type, climate, and the kind and prevalence of weeds are all important. If forage crops are to be grown, an adequate supply of water for livestock must be available. The number and kind of livestock to be kept, native hay and pasture available and power and labor on hand are all important considerations. The susceptibility of the soil to wind and water erosion is as important a factor as any, for this is the most active factor

can be made in its favor in many areas, but in many others, in the park soil areas and in areas of high relative precipitation, it is open to considerable criticism, due to its inability to maintain soil structure and contend with erosion.

This argument is not effective in the dry, open prairie soils. It has the same weaknesses in these areas, but there is as yet no real alternative to the short, cereal crop rotations. Experimental work in the Brown Soil Zone in the southern portions of the prairie provinces has indicated that there is little place for the longer-term rotations. The average yield of wheat on a fallow, wheat rotation representing 236 separate crops on 16 illustration stations in the Brown Soil Zone was 15.4 bushels per acre. When extended to a fallow, wheat, wheat rotation on the same soil type the yield of 84 crops on 12 illustration stations was 15.6 bushels per acre on first crop and 8.6 bushels on second crop. Experimental plots at Whitla, Alberta, gave yields of 8.9 bushels per acre on fallowed land and 1.5 bushels on second crop.



The top picture was taken in 1935 on the farm of G. H. Edgar, Lyleton, Manitoba. The picture below shows some of the changes made since.

What About Crop Rotations?

responsible for driving straight grain producers into rotations which include forage crops.

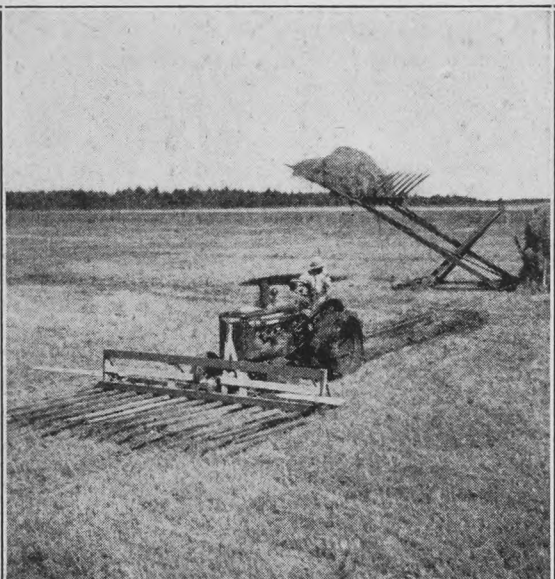
At least at the present time the strong arguments that can be advanced in favor of the longer rotations do not include increases in yields or income. This is particularly so in the richer soils. "The danger on the more fertile prairie soils is not that we will lose the fertility, but that we will lose the soil," says D. A. Brown, Assistant Superintendent at the Brandon Experimental Farm. "Typically the fertility is not lost so much by cropping the soil, as by erosion. We have fields on this farm that we have been cropping for 40 years without using manure or fertilizer and with the new and better crop varieties we are now getting higher yields than we have ever had." It goes without saying that there has been no erosion.

It is safe to say that a three-year rotation is the most popular on the prairies. An irrefutable case

In the Brown Soil Zone rotations which included forage crops in a systematic order have been found unsatisfactory, both because of the difficulty of getting stands and the fact that the soil was almost as prone to erode immediately after the hay crop had been broken up as was the case when no grass had been sown. Results of studies on Asquith fine sandy loam on the substation at Conquest, Saskatchewan, have shown that the most satisfactory practice is to follow a continuous cropping system. A report from the Swift Current Station also indicates that "an analysis of the data on the straight grain rotations shows that on the basis of a ten-year average the highest yields of wheat per cultivated acre have been obtained from continuous cropping."

It should be borne in mind that these experimental results apply only to areas of particular soil type and limited moisture, where long-term rotations are not practicable. The fact is inescapable that the short cereal crop rotations make no provision for the maintenance of soil structure and fertility. Soils under these rotational practices are prone to erode, and such rotations do not make for weed control.

Experimental work substantiates the experience of farmers, that wheat is not too satisfactory a second crop where a three-year rotation is used. Second crop wheat usually suffers a yield decline of 34 to 50 per cent when compared with wheat on fallow. When this is combined with the increased hazard from cutworms, wheat-stem sawfly and field grasshoppers, it becomes a doubtful practice. The fallow, (Please turn to page 34)

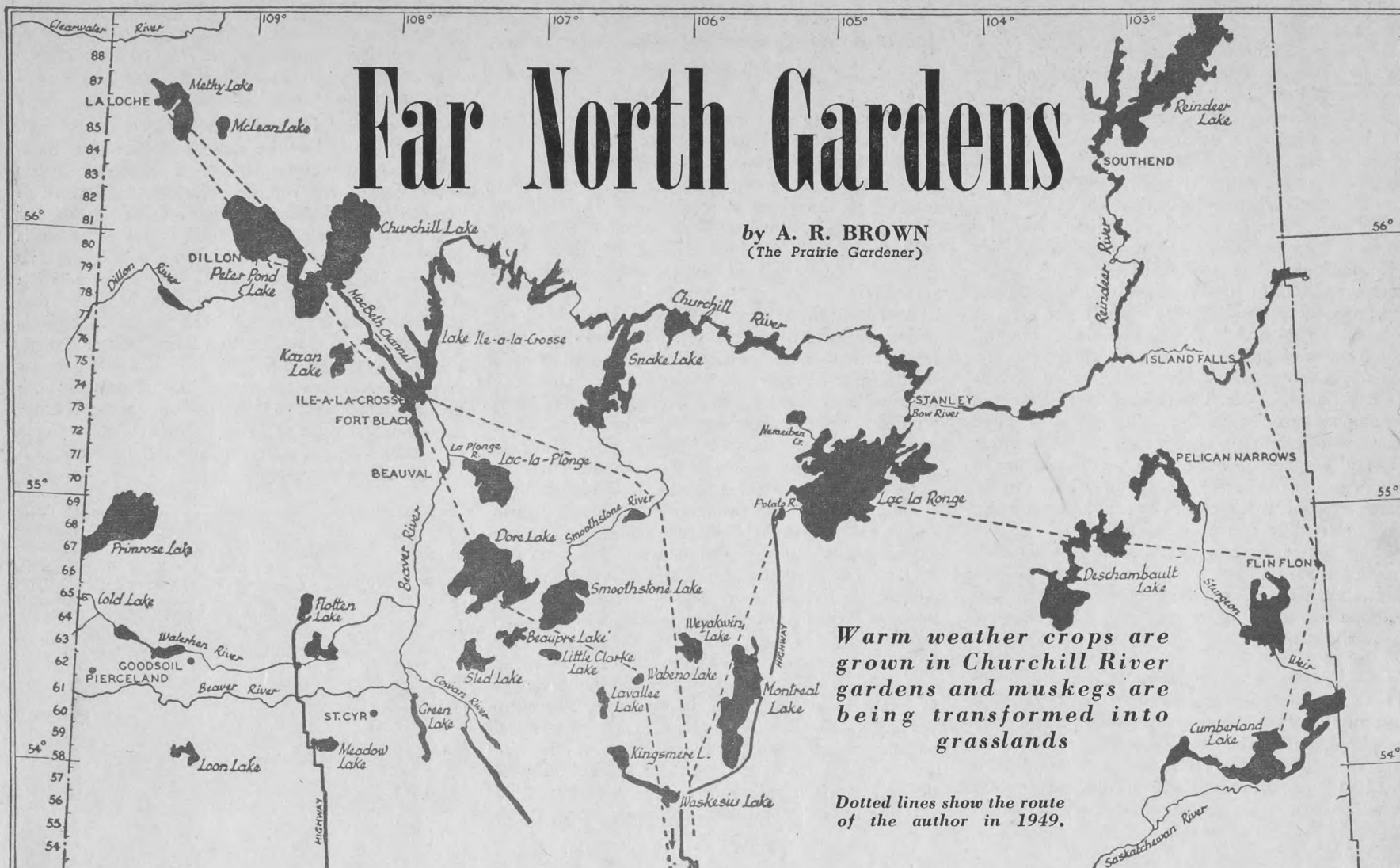


This mixture of alfalfa and meadow fescue gives good yields in an eight-year rotation on a Manitoba farm.

uses a cereal rotation. Even if this is true in the short run it becomes much more questionable over the years.

It is not realistic to condemn short, cereal crop rotations in western Canada. Soil types, rainfall, moisture efficiencies and climatic factors are so diverse across the prairies that no one rotation can be pronounced "best." The man on the land should consider his particular conditions, and decide on any one of a number of recommended rotations.

by RALPH HEDLIN



THE center of Saskatchewan is roughly 70 miles or so north of the city of Prince Albert. A line from Cold Lake on the Alberta boundary to The Pas in Manitoba, indicates the present northern limits of agricultural settlements and passes a little south of that center.

The half of the province north of this line is bisected by the Churchill River System. Practically all the area north of the river, and a small portion south of it toward the Manitoba boundary, is covered by the rocky outcrops of the Precambrian Shield. But between this shield and the fringe of settlement to the south is a broad ribbon of country up to 150 miles wide, that appears to have some possibilities for settlement.

The Saskatchewan economy, based on wheat that fluctuates alarmingly both in yield and market value, needs compensating and complementary developments northward, not only in the mineralized Precambrian Shield, but also in the no-man's-land between the Churchill and the northern fringe of settlement.

THE purpose of this article is to present some little-known data about the Churchill River area, based on exploratory visits made during the summers of 1948 and 1949. In both these seasons exhibits of fruits and vegetables grown in gardens along the Churchill were displayed at the Saskatchewan Provincial Fruit Show. In 1949 several awards in the tree fruit classes were given to exhibits from Dore Lake and Ile-a-la-Crosse, the most northerly winners to date in these competitions. The vegetables were not entered competitively, but would have scored successes as well.

In 1949 Superintendent W. R. Leslie of the Experimental Station at Morden accompanied the writer on a visit to northern gardens. Here are some of his comments:

"The farthest north post visited was at la Loche on Methy Lake, Township 86 located 516 miles north of the North Dakota boundary. It was reassuring to see extensive gardens succeeding very well indeed, under the care of the Missions, the Hudson's Bay Company officers and the native population.

"On August 9, the officers of the Ile-a-la-Crosse Horticultural Society arranged a dinner for the visitors. The banquet table carried 12 vegetables from gardens of the current season, potatoes, carrots, beets, lettuce, onions, cucumbers, celery, cabbage, cauliflower, peas, beans and parsley. An omission from the menu was a vegetable which, although uncertain in southern Manitoba because of disease, seemed thrifty at all points north of 53, the broad bean.

"The Prairie Gardener was judge of native gardens. A total of 30 were scored. The three prize winners would be notable contenders in competitions staged at Winnipeg, Regina or Prince Albert. An impressive feature of the gardens was the potato crop. Burbank Russet or Netted Gem was widely used. At Morden that variety is considered in the late class and requiring much moisture for full yield. The second week in August, a hill in a garden seven miles across from the post gave 38 potatoes. The crop in 1948, as measured by the grower, Fred Kirby, was at the rate of 720 bushels per acre."

IN 1948 at Ile-a-la-Crosse during a visit on August 20, the writer saw the ground red with ripe tomatoes, sweet corn in its prime and seven to nine feet tall, cucumbers ripening, pumpkins already

ripe, and mangels standing 16 inches out of the ground.

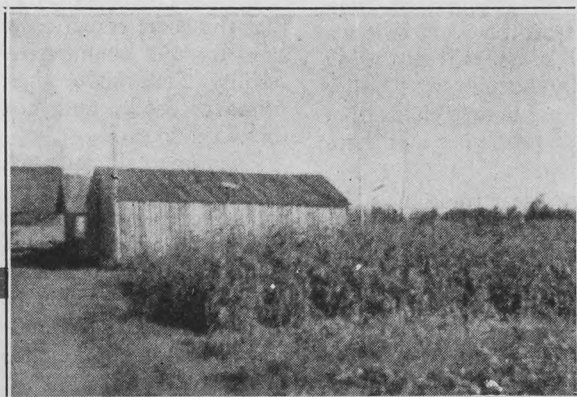
Nor are these isolated or unusual incidents in Churchill River gardens. That year the same thing could be duplicated at a dozen widely scattered points from the Alberta border to Cumberland House and Flin Flon. All gardeners interviewed claimed that results noted were those usually obtained, not the exception.

Perhaps stranger even than the fact of warm weather crops maturing so far north, is that fall frosts frequently do not cut down tender garden stuff until October. The average would probably be mid-September. While spring opens late, killing frosts are infrequent after May 28, and the open fall makes up for the late spring start. In 1948, tender flowers and ripe tomatoes were still being gathered during the first week of October.

Warm weather crops such as tomatoes, corn, cucumbers and marrows are grown extensively at Beauval on the Beaver River, a tributary of the Churchill that enters Lac Ile-a-la-Crosse.

At this point the Roman Catholic Mission School operates a 600-acre farm. Large acreages of oats and wheat are grown, as well as some tame hay. In the mission garden, corn and marrows are important crops. Several tons of marrows are processed into jam for use in the school dining hall during the winter. As this farm has been operating successfully for 50 years and the Mission farm at Ile-a-la-Crosse for 100 years, it is a little difficult to understand why some farm communities have not yet been developed along the Beaver.

On that part of the Churchill River connecting Lac Ile-a-la-Crosse with the large lakes centering around Buffalo Narrows, in Township 77, a number of milk ranches are being operated. The Ausland ranch (Please turn to page 52)



Sweet corn at the R.C.M.P. post at Ile-a-la-Crosse.



Tobacco growing in the Mission garden at Cumberland House.

Alberta's War with the Rat

by JOHN PATRICK GILLESE



Above: A border farm near Alsask, where rats were first reported in Alberta. The rank growth of weeds makes a rat haven.



Left: Once established, rats are very difficult to eradicate. This California operator used poison to good effect.

THE Alberta Department of Agriculture is preparing for large-scale war against mankind's worst animal enemy—the brown, or Norway, rat—which has already crossed the province's eastern border at one known point (Alsask) and may have crossed elsewhere on the dangerous 500-mile front that extends, roughly, from Edam in northern Saskatchewan to Maple Creek in the south.

The scaly-tailed, disease-carrying rodents are closing in on virtually the last rat-free area in the world. Since invading the Canadian prairies, via the North Dakota border towns of Emerson and Marsden in 1910, they have advanced with the precision of a well-trained army. By 1918, or earlier, Winnipeg was an infested city. By 1926, they were established in Regina. In 1945, the last great natural barrier between them and Alberta was crossed—the South Saskatchewan River. This was the time, the experts tell me, when a gigantic rat barrier should have been thrown up on the natural river line. It would have cost an estimated \$5,000,000. Unfortunately, man was involved in another war, and the rats crossed the river.

This spring, definitely, Alberta will be invaded. But, thanks to the intensive education program long carried on by the Alberta Department of Public Health, most Albertans are now strongly rat-conscious. While few have ever actually seen a rat, they have been taught that there are more than 150,000,000 rats in North America—of which the Norway rat is the predominant species; that it costs \$300,000,000 a year just to feed them; that, in addition, they destroy or damage material valued at \$2,500,000,000 annually; that they are prolific and deadly carrying agents of typhus, bubonic plague, infectious jaundice, trichinosis, tape worms and intestinal diseases; and that once established, they cannot be eradicated. Albertans are also aware of the fact that as far back as 1942, the federal Department of Agriculture estimated Canada's rat population at a rough 12,000,000—one for every citizen in the Dominion . . . and since then, as inevitably happens despite man's war on the beady-eyed, flea-infested beasts, the rats have consolidated and increased.

UNDER the Agricultural Pests Act, the rat has been officially declared a pest in Alberta. As such, affable William Lobay, the government's supervisor of Crop Protection Services, has been given sweeping powers to deal with it. Under his

direction are the 36 District Agriculturist's offices in Alberta. Each DA office has been presented with a preserved specimen of a rat, so that farmers may recognize their arch-enemy—the first step to dealing with him. An adult rat weighs about a pound, averages 17 inches from nose to tail-tip, and has an average life span of some three years. Their tails are naked, round and scaly—quite different from the flat tails of muskrats with which rat-wary Albertans have confused them in the past.

By seeding time, some 300 special pest control officers will have been appointed throughout the province. In addition to their duties in the educational campaign, they are charged with destroying the rodents' harborages, food supply and, in general, have full authority to deal with any trace of rats that may appear in their respective territories. "The government," one spokesman told me, "will supply any necessary aid, wherever it is requested, to exterminate any rat, or rats, within Alberta's boundaries."

Lobay is counting on the vigilance of Alberta's health-conscious public to aid him most. The fact that sometimes "false alarms" are given—rats are often confused with pocket gophers, too—does not

fast they breed. A Vancouver rat-proofing and extermination expert, W. X. Bielek, believes they breed as early as six weeks after birth. Gestation period is 20 days, and families range from a bare five to a rare 20, with eight to 14 an average litter. They breed five to six times a year. In theory, says Bielek, a pair of rats could produce over 400,000 offspring in 54 weeks—assuming average litters of eight.

ALBERTA authorities have the figures on a very realistic basis. Once a territory becomes infested, they tell me, there are two rats for every human being. Translated into dollars and cents, that means that if Alberta ever became infested, there would be roughly two million rats here. "It costs \$2.00 per year per rat just to feed them," the officials went on, "which would mean a loss to Alberta of \$4,000,000 annually. Damage costs an extra \$1.00 per month per rat—or \$24,000,000 yearly." That adds up to \$28,000,000 a year—not counting the toll in sickness, disease, loss of man-hours, pay cheques, etc. Just to be conservative, the Alberta authorities say that \$25,000,000 a year would be the least Albertans could expect to lose if they lose the battle with the brown rat.

Who would pay this financial toll? The succinct answer given is: "Everyone." Lobay, steeped in rat studies, gave me some figures. "It is estimated that 80 per cent of all food-handling places in the U.S. are infested by rats." (In Vancouver, a rat was photographed licking a soda-fountain top. Rats can gnaw through a section of cement or any substance not harder than the enamel on their teeth; can cut a three-inch notch in a wooden beam; and will rip every carton and sack within reach. Repeatedly, in rat-infested cities, firemen have traced the outbreak of disastrous blazes to a rat that began chewing a box or—as in a million-dollar warehouse fire—a carton of matches.)

"Likewise, in the U.S.," continued the Supervisor, "rats damage 200 million bushels of grain yearly, and the annual rat bill in that country is over two billion dollars."

These highly expensive enemies destroy almost everything edible—soap, meat, apples, textiles, grain, poultry, eggs and (Please turn to page 66)

The last rat-free area on the North American continent is girding itself to repel an expected invasion this year

annoy him in the least. "Compared to rat eradication," says Lobay, "running down a genuine false alarm is generally a great relief." Even the finding of a dead rat should be reported at once—to the nearest Pest Control Officer, the District Agriculturist or, if necessary, to the Department of Agriculture.

The province has good reason to be deadly serious in its campaign, for the history of the Norway rat is so steeped in suffering and destruction that

BARNEY WINSLOW

meets a test

by DAVID LAVENDER

Illustrated by Clarence Tilenius

Barney came to the Morning Glory Mine asking for a job. The going was tough and so was Jack Garvey the shift boss, who along with others at Rock Creek remembered old Doc Winslow's record

Axel Berg and I were threading pipe out by the tunnel entrance when an empty truck came up the hill. A pinch-faced young fellow climbed out and came up the trail.

always slipping the men something good to eat. It helped make the Morning Glory easier to endure. We took the rolls, grinning our thanks.

Mary went back to the kitchen. Winslow stared after her as if he'd been turned to stone. Suddenly we hated him.

"Well, what are you gawking at?" Axel snarled.

The kid jumped. "Nothing," he said, and went to find Will Curtis.

Evenings were long and good in June. And the kid didn't know our ways. I think that after supper he must have just stepped up to Mary and asked her to go for a walk. She'd agreed. Stranger still, Ma hadn't objected, though she'd never let any other hard-rock stiff go walking with Mary up at the mine. But maybe she'd seen what Axel and I had already seen.

Now they were coming back. The light was almost gone; rich smells of the sun-baked earth flowed through the coolness, and purple shadows crept like smoke. We were lounging on the boarding

house porch, soaking it in—and watching Garvey. Long ago he'd set his mind on Mary Owen.

Garvey was a handsome devil, black-haired, lean and hard; and ruthless when he saw something he wanted. He knew how to spend money for a good time, and how to save it for a purpose, too, a rare thing in this trade. He was too fine a miner to stay long at a clapptrap hole like the Morning Glory. Mary could have picked worse

—was picking worse right now, to all our minds. So we watched and waited.

The two came out of the shadows and went into the kitchen. Axel Berg growled, "He's a fast worker."

Garvey's smile made goose pimples run along my back. "He'll slow up in a tight," he said. "It's in his blood."

Inside the mountain was a shaft which had been sunk thirty years ago and then abandoned when it didn't pay out. But the price of gold had gone up since. Garvey, with his nose for ore had poked into the hole and seen how it might make money if we shaved corners. So he gave Axel Berg and Mike Janovitch a contract to open it again, and supplied them with whatever materials and help they needed. I'd done some timbering for them, bracing the rotten rock with new stulls wherever necessary, but in the main they were

(Please turn to page 54)



MARY

AXEL BERG and I were threading pipe out by the tunnel entrance to the Morning Glory gold mine when an empty truck came grinding up the hill from Rock Creek. A young fellow climbed out. I wouldn't have paid him any attention if Axel hadn't frowned and said, "What's the kid doin' here?"

I took another look. Obviously the boy had bummed his way from town, but I saw right off that he was no ordinary hard-rock stiff on the loose. He carried a little black satchel and a big brown suitcase with brass corners. He came up the trail and asked, "Where can I see about getting a job?" His face was pinched as though he had a lot of unhappy thoughts cramped up behind it. His long, thin hands didn't look like miner's hands.

Axel, wise old Swede, didn't answer right away. He and tough little Mike Janovitch needed an ore mucker down in the shaft they were working on contract. But that patched-up hole was no place for a green hand—or a yellow one, either. I thought Axel would stall the boy, but the Swede had something else on his mind.

"You're Barney Winslow, ain't you?" he asked. "Old Doc Winslow's son. Ain't that right?"

"Yes," the kid said.

"Where you been all these years?"

"At school. In California."

"What for you come back?"

The pinched look grew on the kid's face. But his head stayed up. "I've got to earn money for my last year in college. I heard the Morning Glory pays good wages."

Axel grunted and glanced down the barren hill toward the long grey flats where the Nevada heat lay almost visible on the endless sage. There was nothing there—nothing until you got to Rock Creek, 60 miles away. The mine had to pay good wages to get help. Every one of us, from "Ma" Owen who ran the boarding house down to the grimeiest powder monkey in the stopes, was there to make a stake and make it fast.

Axel's slow look came back to the kid. "Did you know that Jack Garvey is our shift boss?" he asked.

A muscle rippled along Winslow's cheekbone. "Yes," he said, so low I could hardly hear it.

Half-forgotten stories stirred in my mind. Six winters ago Garvey and his partner, Tom Billings, had been prospecting in the mountains back of Rock Creek. Right during the worst storm of the year Billings had doubled up with acute appendicitis. Garvey bucked the blizzard for 13 miles to get old Doc Winslow. But Doc Winslow heard the avalanches thundering in the pass and refused to go. Rock Creek had never forgotten it. Garvey saw to that. People wouldn't even speak to Doc Winslow on the streets. He had turned to liquor. Four or five years ago he'd drunk himself to death.

And now Garvey was at the Morning Glory . . .

The kid's gaze slid to the truck he'd come on. It'd be going back in a little while. . . . Then he shook himself and faced Axel.

"Does Garvey do the hiring?" he asked.

"No," Axel said. "Will Curtis, the super, handles that. But Garvey can fire."

"Where'll I find Curtis?"

Axel shrugged and told him. The kid picked up his satchel and his suitcase and started toward the office. Then suddenly he stopped as if he'd been hit. Mary Owen, Ma Owen's daughter, had just come around the corner from the boarding house kitchen and had nearly run him down.

I DON'T know how Mary looked to younger guys but to me she was like

cool spring stars coming out. For a second I thought Barney Winslow was going to reach out and touch her to see if she was real. Other punks have tried that, too. I waited for Mary's blue eyes to ice him down. And then I saw the pink flood into her cheeks, all amber-browed by the sun and pretty enough until this warmer color made them prettier.

Very quickly she turned to Axel and me. She had some cinnamon rolls, crusty and hot-smelling, fresh from the oven. "Ma thought you'd like to sample these," she said.

That was Ma Owen's way—

Garvey, the kid and I went down in the bucket.



Axel started to dismantle his now useless machine.

IN the past the value of bullfrogs to Canada has been considerable. Thousands of pounds of this delicious meat has found ready access to United States markets. No article of diet is more sought for, or more relished as a food by a diversity of creatures from man to reptiles.

There is a belief that only the hind legs are eaten, this is true of the lesser species, green and leopard frogs. In the case of the jumbo, the trunk and shoulders are just as desirable as the legs.

During the war the price of frog meat advanced rapidly with disastrous results to our jumbo bullfrogs. It is a regrettable fact that scant attention has been given these valuable amphibians by those in authority. Until today, in spite of their productiveness, they are disappearing from our shores and muskrat lakes. Those which have escaped the red flannel hook, the .22 rifle, and the flashlight by night, can barely increase above the appetites of their natural enemies—wading birds, snakes, mink, fox and racoons. Our jumbo frogs are doomed to disappear unless drastic action is taken.

We have many fish hatcheries for restocking purposes, but no bullfrog hatchery has yet made its appearance. A bullfrog hatchery would supply millions of tadpoles. Each female lays from 15,000 to 20,000 eggs. In Canada the eggs hatch in less than a week, depending on the water and air temperature, which should be 75 and 72 degrees respectively for most rapid multiplication. The tadpoles are easily raised and can be shipped to depleted waters as fingerlings are shipped.

THE Canadian bullfrog is second to none in quality of meat, size, hardiness and fecundity. It has no diseases, adapts itself to most climates and is susceptible to cultivation.

All the true frogs belong to the Rana group, bullfrogs, green, leopard and pickerel. Incidentally, bullfrogs are monogamous by nature, each male mating with but one female during the breeding season, which in Canada starts around July 1.

The bullfrog's deep bass voice is familiar to all and is the source of its name. This bellowing is the love call and draws the frogs together in groups or colonies. Mating begins soon after the females are lured to the breeding grounds. In Canada, egg laying continues until July 15. Bullfrogs should be protected up till July 15.

A large mass of many thousands of eggs are laid by each female. During the egg laying the male embraces the female, but the eggs

are fertilized in the water, and are left to hatch by the heat of the sun. Each egg mass floats on the water and covers near five square feet.

The common bullfrog (*Rana Catesbiana*) is distributed over most of North America. It reaches a length of eight inches from tip of nose to posterior end of body. The coloration varies according to location. Ontario bullfrogs are mottled brown; this coloration takes on a much deeper hue when they are shipped into the Canadian West.

The following extract is taken from a frog farmer's letter in the State of Washington:

"It is of interest to note, that our present stock that has since multiplied into four numbers from a humble beginning, have also taken on a dark olive green color; in contrast to the original foundation stock, which were of a light greenish hue."

Frog Farming

Canada is a natural habitat for the bullfrog, but unrestricted slaughter is jeopardizing the establishment of a profitable export of frog meat

by M. H. FENTON

The bullfrog is a shore line creature. They prefer sloping banks well covered with vegetation, shady spaces, wherein they can hide from the sun's rays, as they are nocturnal by nature. With the approach of cold weather they enter into the mud at the bottom of ponds, rivers and lakes, hibernating, until called forth by the warm days of spring.

Bullfrogs do not pursue their prey beneath the water. They get their food on land and from the surface of the water. The food must be alive and in motion. The tongue is the main organ of apprehension.

OUR giant jumbo is unknown in France, but Frenchmen eat the common green frog which exists abundantly wherever there are marshes or ponds. Most of the frogs sold are caught wild, though some attempt has been made in recent years to propagate them artificially. Principal frogging regions are the marshes of the Seine near Paris, in southwestern France and Lorraine. The great French frog market is Loch Halles in Paris, where the dressed frogs are brought strung in dozens on wooden sticks or skewers. These bunches become commercial units and can be transported, bought or sold like fresh meat or fish.

Both the French and the Japanese tan frog skins into leather used for lining purses and binding books. The ingenious French also manufacture the



skins into glue. In America the skins are now being manufactured into ladies' shoes, and other novelty articles.

Millions of American bullfrogs are croaking in Japan today. Frog legs are served at all Japanese restaurants. Some years before the world war Japan imported from Louisiana 5,000 bullfrogs for cultural purposes. Conflicting reports regarding the fate of these original croakers came to the Department of Conservation at Washington from time to time, but no authentic information could be obtained.

Recently, however, a Japanese farmer and fish culturist of Kobe, by name, Uchida, arrived in

Washington to consult a noted American biologist.

On being asked about the shipment of 5,000 frogs, Mr. Uchida said, "Only 1,000 survived the long ocean voyage. At first, he said, 'the people didn't know how to raise them, and they increased and began to run wild over the countryside."

"The Japanese are very superstitious," declared Mr. Uchida, "so when they would hear a jumbo croaking at night, not being accustomed to the sound, they would think it was a ghost. Thousands would gather in awed silence to listen to the weird sound."

"By degrees," said Mr. Uchida, "the farmers of Japan began to raise frogs scientifically. The method employed was entirely different from that used in this country. In North America the frogs are given a large pond or lake area. In the Orient, where labor is cheaper than land, they are raised in crowded pens where they are fed vast quantities of grasshoppers and fly-larvae." This opens up an avenue of thought—Canada also has its regular crop of grasshoppers.

It is remarkable how the bullfrog adapts itself to all climatic conditions and thrives. It will thrive anywhere except in salt water and cold mountain streams.

The layman finds it quite difficult to distinguish the sex of bullfrogs. This is quite easy if you note the following: the disk-like tympanio (ear) of the male is twice as large as its eye. The male also has an enlarged thumb. The female of the species has an ear the same size as its eye.

Despite the popular notion that it is the French who are the world's great frog-eaters, there has been a sizable frog fishery, duly classed as such, at Washington for the past 50 years. As long ago as 1900 the Federal Bureau of Fisheries estimated the yearly catch of frogs at nearly 1,000,000 and production in recent years has approached the 2,000,000 mark.

The limit to popularization of frog meat in this country has not been demand, strange as that may seem, but the scarcity of the natural supply. During the world war frogs soared to such extravagant prices that the more valuable species were all but exterminated in many sections. Twelve states now have passed conservation measures.

On the commercial frog farms, green frogs are raised as a source of food for the growing jumbos. Green frog tadpoles remain one year in the tadpole stage and serve as food throughout the open season. Even after transforming at one year,

these small frogs, being aquatic, spend all their time in or near the water. This rotation of choice food for the jumbo continues season after season from the green frog's breeding pen.

Such results cannot be obtained from the two lesser species, the leopard and pickerel frogs. They cannot be classed as aquatic. As soon as transformation has occurred, which is four and three months respectively from the egg, these small frogs leave the water and wander to other pools and meadows.

Frogs and their offspring, which are called tadpoles, are cold-blooded. The tail of the tadpole is absorbed, sustaining life during the transition period, which is three weeks.

The larger the frog species, the longer its progeny remain in the tad- (Please turn to page 60)



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B.C. Tempers Frayed

Two atrocious winters may have had something to do with critical attitude of the public toward the provincial government

by CHAS. L. SHAW

PREMIER BYRON JOHNSON'S coalition government found the going in the legislature almost as rough this spring as farmers found the roads after British Columbia's unprecedented March snows.

The government was the target for criticism from within and outside the House. Even members of the coalition group showed an unusual spirit of independence, bordering sometimes almost on rebellion, and of course there was persistent sniping from the C.C.F. opposition. And the government seemed almost continuously in hot water with various groups of voters.

The coalition is strong enough numerically, of course, to withstand almost any assault. But 1952 is presumably an election year, and government leaders did not find the prospect particularly heartening in view of all the apparent unrest this spring.

The "unusual" weather didn't help the situation. After two tough winters British Columbians had expected a bright and early spring. Instead, they got more snow in March than ever previously recorded and it wasn't until late in the month that conditions approached the seasonal norm. As a result everyone was in a cantankerous mood, and perhaps it was only natural that little groups here and there spent at least a part of their fury and annoyance on the government.

However, it would be unduly imaginative to suggest that the weather was responsible for all the government's troubles. The weather merely put an extra sting in the criticism. The government couldn't seem to do a thing that pleased everyone, yet only a year ago the coalition could seemingly do no wrong. This year the provincial politicians are not only being rebuked for what they do, but for the way they do it, and more and more one hears the charge that the coalition is governing by caucus—transacting its important business and setting policy in camera rather than on the floor of the legislature.

The government came in for abuse over its handling of the liquor issue this session, and when Premier Johnson announced that as part of the railroad expansion policy the P.G.E. would be extended through residential West Vancouver, the people of that community could not have protested more if he had proposed the location of a leprosarium there.

BUT most of the outcry was over the government's compulsory hospital insurance program. This has been easily the most controversial subject before the legislature and it may continue to harass the administration during the coming election year. That possibility indeed may have been a strong influence in persuading the government to deal with the unpalatable issue so boldly at this session rather than let it drift along to muddy the election waters in 1952.

The thing that touched off the fireworks in the legislature was the government's decision to order a further increase in hospitalization premiums from \$21 to \$30 for single persons

and from \$33 to \$42 a year for families. The purpose, of course, was to get the hospital insurance system out of the red and on a sounder economic footing, but C.C.F. Leader Harold Winch interpreted the measure as a disgraceful breach of contract with the people. Actually, such an adjustment was more or less inevitable because the deficit in the insurance fund is \$4,000,000, despite previous efforts to bolster it through higher premiums and treasury grants.

Readers of this letter will not be surprised by the British Columbia government's decision not to reopen the liquor issue this year. When the session opened at Victoria many individual members sounded off on this subject, declaring that the present system of liquor control was obsolete and hypocritical, and for a while it seemed as though the government might feel obliged to move through sheer force of oratory.

However, the coalition caucus was persuaded by Attorney-General Gordon Wismer that it would cost too much to hold a province-wide plebiscite on the subject. He put the figure at \$300,000, and this was regarded by the Vancouver Sun, strong advocate of liquor reform, as "calculated to panic M.L.A.'s who are demanding a plebiscite." But whatever it was, it clinched the decision, and now the attitude of the government is that the time for a plebiscite on liquor is at the time British Columbians go to the polls to elect a new legislature.

The present plan is to have local plebiscites held throughout the province and if a majority are opposed to change, that will be the end of it—for the time. This is poor comfort for Vancouver, where most of the sentiment in favor of change prevails, because the rural communities are expected to vote pretty solidly against more liberal sale of liquor—that is, by the glass instead of the present system of by the bottle in government stores.

OVER the past 30 years the provincial government has poured more than \$124,000,000 into the Pacific Great Eastern Railway, but the cabinet is nevertheless quite optimistic concerning this enterprise. Some individual members of the legislature have been saying that the government should get out of the railroad business; that it should never have got into it in the first place. But the government doesn't agree with that at all. Instead of considering the sale of the P.G.E., the government is proceeding with its expansion. Within a couple of years one will be able to ride in the government-owned railway from Squamish at the south to Prince George on the main northern line of the C.N.R., and Premier Johnson hopes that in a few more years it will be possible to ride clear through to the Peace River country on the P.G.E.

The government's plans to extend the road south from Squamish to Vancouver, although generally agreeable, ran into angry opposition from the West Vancouver area, however. Years ago the P.G.E. ran a railroad to Horse-

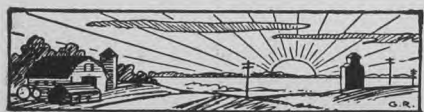
shoe Bay on the way to Squamish; then the rails were pulled up and few people supposed that the roadbed would ever be used again. Some optimists even built their homes on the right-of-way. Obviously these people are agitated by the government's decision to restore the roadbed and the railroad. Citizens' committees are being formed to fight the project—one of the rare instances in history when a community rises in indignation against a plan to put it on the main line of a railroad.

IT begins to look as though the Okanagan fruit growers who suffered serious tree damage during the unprecedented winter of 1949-50 will be unable to get anything like the compensation they had expected and had reason to hope for. The damage was estimated in millions of dollars, partly due to destruction of trees and the impossibility of restoring productivity with new orchards during the next few years.

The growers made a joint appeal—to Ottawa and to the British Columbia government, and for a while it seemed as though Victoria would be willing to match dollar for dollar with the federal government on this score. However, Ottawa has practically wiped its hands of the whole matter on the ground that the Okanagan's plight cannot be regarded as a "national disaster" such as the Fraser River and Winnipeg floods. So that has left the problem with the province, and the growers are still hopeful of obtaining some relief from that quarter, although it certainly will not be on the scale that had been expected. Meantime there is a possibility that individual growers may be able to apply for assistance through the Farm Loans Improvement Act.

THERE'S still no official word as to whether Aluminum Co. of Canada intends to proceed with its half-billion dollar project at Kitimat on the west coast, but for a company that may not be officially sure of its future it is certainly making some pretty impressive commitments. Some of the biggest contractors in the West are organizing on an ambitious scale to build roads and power lines, tunnels and other facilities that will be required for the power plant which, if all goes well, will serve another Arvida on the Pacific coast.

When the aluminum question was given an airing in Washington and several American politicians deplored the possibility of a Canadian plant underselling American competitors, it seemed for a while as though the Kitimat enterprise was likely to be held indefinitely in abeyance. But the situation has improved since then, and Trade Minister C. D. Howe has virtually admitted that the way has been cleared for the development—for its initial phases, anyway. The overpowering factor in favor of the B.C. project and one that apparently can't be matched anywhere is the abundance of hydro-electric energy locked up in the lakes of British Columbia that can be harnessed at fantastically low cost.



OLIVER "88"

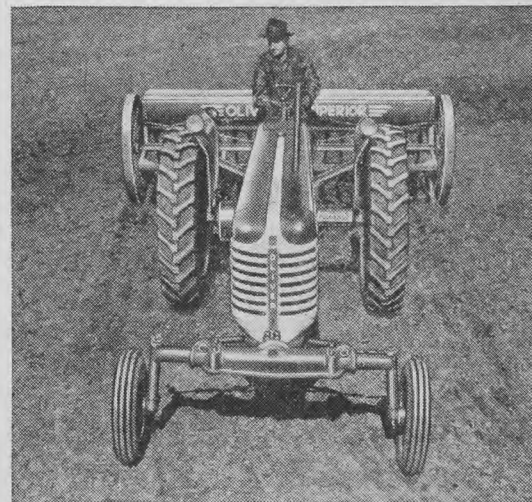
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There's a choice of four tractor-built engines, designed specially to operate efficiently on the fuel you prefer—high compression engines for gasoline and for LP-gas, a "KD" engine for tractor fuels, and a remarkable new diesel engine. Also available for the "88" is the time- and power-saving Direct Drive Power Take-Off and the convenient "Hydra-lectric" system that gives you complete implement control.

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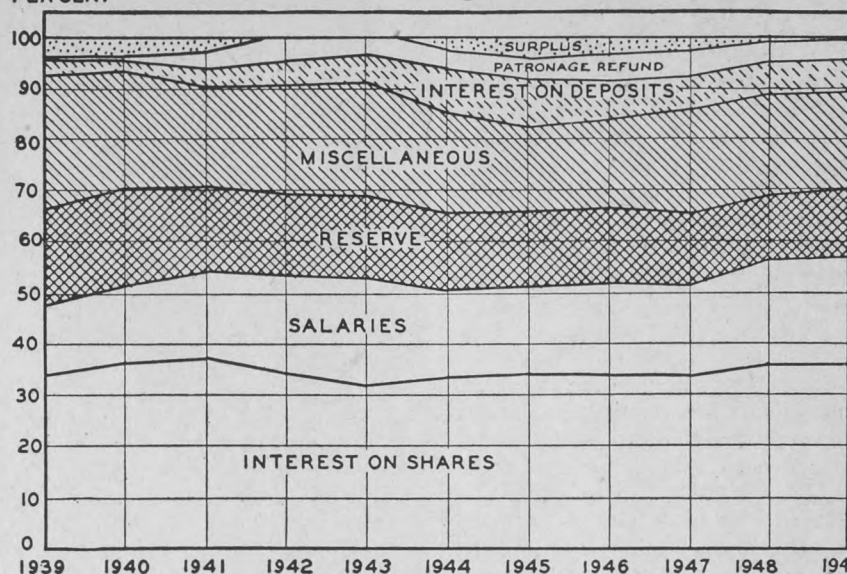
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News of Agriculture

PER CENT



How the total income of credit unions in Saskatchewan was distributed for the period 1939-49.

Credit Unions in Sask.

A SURVEY of co-operative credit in Saskatchewan has now been completed by the Department of Co-operation and Co-operative Development, Regina, in co-operation with the Economics Division, Canada Department of Agriculture, Ottawa. The 105-page report, now published, appears to be a reasonably complete treatment of the subject. Part one deals with farm income, indebtedness and credit agencies operating in Saskatchewan, and also contains an appraisal of the credit needs and facilities of the people of the province. Part two surveys credit union experience in the province, and outlines not only the historical background and expansion of the credit union movement, but credit union organization and administration as well. It also analyzes and reports on the operations of a selected group of credit unions, deals with finance management and the educational policies of the unions, and outlines the development and operations of the Saskatchewan Co-operative Credit Society. Part three of the report deals with co-operative credit experience elsewhere, in Quebec, the United States and England.

There were 228 credit unions in Saskatchewan at the end of 1949, the first having been established in 1937. The combined assets of the credit unions was \$11,037,882, while outstanding loans amounted to slightly more than six million dollars.

An examination of 31 credit unions over the 1943-45 period indicated that the size of loan tended to increase with an average in the size of assets held by the credit unions, ranging from \$51 for credit unions with assets of less than \$5,000, to \$363 for unions with assets over \$50,000. Farmers made considerable use of credit obtained from the unions for meeting fixed capital requirements.

The rate of delinquency on loans decreased with increase in the size of the loan, and with the length of the lending period as well. Of loans made for less than \$25, there were 39 per cent overdue on examination, and only 32 per cent for loans between \$25 and \$50. Loans made for one or two months were 54 per cent overdue.

The Saskatchewan Co-operative Credit Society, established in 1941 to provide wholesale credit to credit unions and co-operative organizations,

had 367 members by November 30, 1949, as well as \$1,363,200 paid up capital, \$3,207,119 in deposits, and \$2,543,015 in outstanding loans. All of the 228 credit unions operating in the province were members of the Society with the exception of 48.

World Butterfat Record

IN 1945 Alcartra Gerben, a Holstein cow owned by Hays Limited, Calgary, Alberta, established what was hailed as the world record for butterfat production at 1,409 pounds fat. On January 5, 1951, Carnation Homestead Daisy Madcap completed a record of 1,413.6 pounds fat from 34,553 pounds of 4.1 per cent milk on four-times-a-day milking at seven and a half years of age.

The American Milking Shorthorn Society has recently called "false and misleading," statements which have recently appeared in the farm press regarding the world butterfat production record. The Society calls attention to the fact that in June, 1924, the Milking Shorthorn cow Melba Fifteenth of Darbalar, New South Wales, Australia, completed an official 365-day record of 1,614 pounds butterfat from 32,522 pounds of milk. Her test was made under the supervision of the Department of Agriculture of New South Wales and according to the rules governing the Australian Registered Purebred Dairy Cattle Production Recording Scheme.

The Milking Shorthorn Journal (U.S.) says that "since that time there have been those who have not been willing to accept this test as a world's record. Not because they doubted the fact that this cow actually produced the amounts as announced by the Department of Agriculture, but because the methods of supervision of the test were different from the supervision rules in this country—and are therefore assumed to be wrong."

This long standing controversy reminds us of the first verse of the 53rd chapter of Isaiah.

Buying Britain's Food

THE British government has been running into difficulties from several directions recently, with the purchase of food supplies. Much publicity has attended the dispute with Argentina over beef prices. Both Britain's offer of \$90 per ton and Argentina's demand for \$140 per ton seemed to be seriously out of line. Commenting

on this and other contracts, the National Farmers Union recently said: "There have, however, been a considerable number of similar negotiations over the past 12 months, both with the larger and the smaller suppliers of our essential food imports, and many of these have ended either in a deadlock, or in a somewhat uneasy price settlement. The publicity given to the Argentine deadlock would therefore have fulfilled a useful function if it draws attention to the dangers inherent in the government's present attitude toward any increases in the price of our imported foods."

"Any ministry of food has two main duties to perform for its government and for the public. They are, in order of importance, the provision of an adequate supply of food, and its provision at as low a price as will ensure continuity in that supply. At the present time there are ample indications that the present ministry is showing a marked tendency to neglect the former in its zeal to keep imported food prices at the lowest possible level."

The N.F.U. then discusses the effect of devaluation of U.K. and European currencies in terms of the U.S. dollar, and suggests that as far as Denmark, Holland and Eire are concerned, devaluation meant an increase in the price of imported corn and oil cakes, in the region of 40 per cent. This circumstance lead to demands for increased prices from Britain for food products on behalf of Denmark, New Zealand, Eire, Holland and other suppliers.

The N.F.U.'s conclusion after considering these and other factors, including Canada's decision to end the subsidization of food shipments to Britain, was that "Unless there was a greater degree of flexibility in the government's attitude toward our major food suppliers, the British public will be faced not only with a meat shortage, but also with a shortage of cheese, butter, bacon and other staple foods."

Cash Farm Income 1950

IT is now estimated by the Dominion Bureau of Statistics that cash farm income in Canada during 1950 was 10.9 per cent below the record high figure of 2,494.8 million dollars received in 1949. The 1950 figure at 2,223.5 million dollars shows the decrease entirely brought about by a decrease in cash revenue in the prairie provinces. The figure does not include Newfoundland, but in all other provinces except the prairie provinces, cash receipts were slightly higher in 1950.

Manitoba showed a drop from \$242.8 million to \$196 million; Saskatchewan from \$560.7 million to \$407.6 million; and Alberta from \$460.3 million to \$368.8 million. These figures exclude all supplementary payments, but do include receipts from grain equalization and participation payments. Prairie farmers also received a total of \$13.8 million in 1950 as supplementary payments under the provisions of the Prairie Farm Assistance Act.

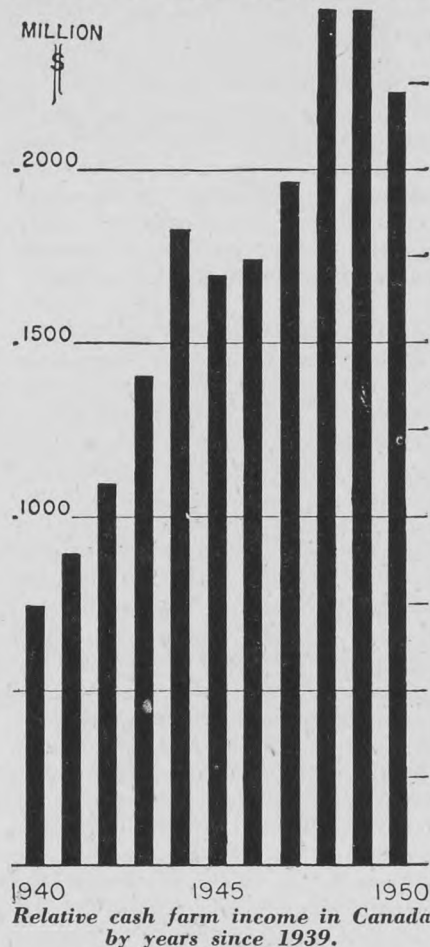
A substantial part of the decrease in the prairie provinces arises from the fact that only about \$50 million was paid in the form of participation and equalization payments in 1950 as compared with approximately \$220 million in 1949. The low quality of the crop, and the lower initial pay-

ment to producers reduced wheat dollars in 1950 by almost 20 per cent.

Decreased returns from coarse grains is also explained by the Bureau as arising from smaller markets, lower grading crops, and lower initial prices under the Compulsory Marketing Scheme instituted August 1, 1949.

Lower average hog prices ruled during 1950, but increased returns were received from cattle, calves, sheep and lambs. Income from dairy products was 6.9 per cent below 1949, while smaller marketings and lower prices reduced the income from the sale of eggs as well.

Readers may be interested in the fact that maple products at \$7.18 million brought in more farm receipts than corn at \$6.349 million, or the combined returns from wool at \$2.2 million and honey at \$4.306 million.



Destroying the Barberry

THE prairie provinces of Canada are fortunate in that we do not appear to have any of the barberry species which act as host plants for the stem rusts of grain. In the United States, however, the country is faced with the gigantic task of locating and destroying all barberry bushes on more than a million square miles of land in 18 states. Eighty per cent of this area is said to be practically free from barberry bushes, but at least 28,000 square miles are said to be now in the process of reinfestation owing to the fact that the work of eradication fell behind during the war years.

In 1950, the U.S. Congress was recently told, a total of 20,731,900 barberry bushes were destroyed on 3,826 properties in the 18 states. Government at all levels, including farm organizations, industry and individuals, are contributing money and time to this program, for which the federal government appropriation alone is \$700,000 a year. An increase of 15 per cent was recently requested owing to the threat to grain crops provided by Race 15B of the wheat stem rust organism.

WEED CONTROL



Testing various weedkillers for effectiveness. One section of the Green Cross Research Station near Winnipeg, Manitoba.

Fast-acting Weed-No-More "80" used on 1 out of 4 acres treated

LAST YEAR Prairie growers used Green Cross Weed-No-More "80" on one out of every four acres treated with a chemical weed-killer. They picked Weed-No-More "80" from dozens of weedkillers available on the market. Why? Because they could count on Weed-No-More "80" for fast-action, thorough weed control and the utmost crop safety.

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KILL WEEDS in your grain with Green Cross Weed-No-More "80". Get the weedkiller with the special formulation **proved superior** on

millions of acres of Canadian crops. Weed-No-More "80" gives you these advantages: It penetrates weed leaves quickly... rainfall a few minutes later cannot wash it off. It kills weeds fast. It's safe... will not harm your crops when used according to the simple directions.

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Many weeds steal large quantities of soil moisture. When they do, they deprive your crop of much needed nourishment. Mustard is one of these weeds. A single mustard plant can pump away almost a full pint of water from your soil every single day. Good reason to get rid of mustard!



Notice the field in the picture above. Half of it is overrun with mustard. The other half **was**—until it was sprayed with Weed-No-More. Mustard is readily susceptible to Weed-No-More "80".

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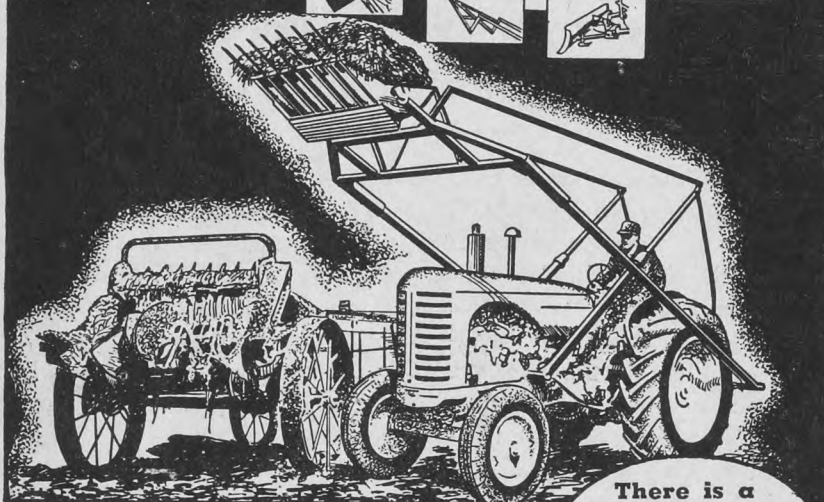


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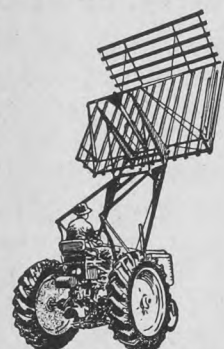
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Get It at a Glance

Round-up of facts, news and developments in the agriculture of this and other countries

PER capita meat consumption in Canada for the years 1935-39 amounted to 118.3 pounds. For the year 1950, per capita meat consumption was 134.1 pounds. Meanwhile, due to rising prices and beef scarcity, per capita consumption of beef dropped from 54.7 to 50.5 pounds, but pork rose from 39.8 pounds to 60.8 pounds. Veal dropped from 10.5 to 9.2 pounds; mutton and lamb from 5.6 to 2.5 pounds; and canned meats increased from 1.9 to 5.5 pounds.

THE 30th Annual Feeders' Day, held at the University of Alberta under the auspices of the Department of Animal Science, will take place on Saturday, June 2, this year.

THERE have been 61 Saskatchewan municipalities which have passed the by-law calling for complete testing of all cattle of breeding age and the removal of all reactors for slaughter on account of Brucellosis, or Bang's disease. Of this number, 27 municipalities have completed the testing.

THE Holstein-Friesian World recently reported that 55 dairy cows in the United States and Canada have produced 1,200 pounds of butterfat in one year or more, over the last 50 years. Of these, 40 were Holstein, six Brown Swiss, four Jerseys, two Guernseys and two Ayrshires. Of the total number, 22 were Canadian and included the two Ayrshires, three of the four Jerseys and 17 Holsteins.

THE factors of distance, availability of domestic markets and the character of farm products produced in different parts of Canada account for the wide variation in the index numbers of farm prices of agricultural products reported by the Dominion Bureau of Statistics for the different provinces. The 1950 index number for Canada as a whole was 253.4, but the variation between provinces ranged from 188.3 in Prince Edward Island to 265.5 in Ontario. In the four western provinces the range was from 235.0 in Saskatchewan to 243.6 in British Columbia, 261.4 in Alberta and 262.1 in Manitoba.

THE U.S. government will support the 1951 corn crop at 90 per cent of parity which means a minimum national average of \$1.54 per bushel. Support for the 1951 crop of oats, barley, rye and grain sorghums will mean a minimum price of 72 cents per bushel for oats, \$1.11 for barley and \$1.30 for rye.

DURING 1950, U.S. cattle numbers increased by 4.1 million head to a total of 84.2 million cattle and calves on farms and ranches on January 1. This figure is only 1.4 million short of the 85.6 million head reported on January 1, 1945.

IT is reported that a poison has been extracted from a tiny wasp called the habrobracon. It is so poisonous that when introduced into the blood in such minute quantities as one part in 200 million, it can kill caterpillars 1,000 times the size of the wasp, which is only one-sixteenth of an inch long.

IN 1950 the net income of U.S. farmers expressed in terms of purchasing power had declined by 30 per cent from 1947.

CANADIAN farm wages were highest in British Columbia in January, averaging \$90 with board, and \$141 without board. Wages were the lowest in Manitoba, averaging \$68.55 per month with board, and \$101.96 without board.

THIS year is census year in Canada. Beginning June 1, 20,000 enumerators will begin asking of every Canadian citizen the necessary questions to enable a complete inventory to be taken of the Canadian population. The enumerators have a hard job. Help them as much as you can by answering questions promptly, freely and accurately. The law expressly forbids any use of census data for taxation or military purposes.

IN Alberta over 130 rural electrification associations have been set up, and as at December 31, over 11,000 farms in Alberta were being supplied with electric power. It is expected that from 3,000 to 5,000 more farms will be hooked up in 1951.

APUREBRED Holstein heifer, Hallholm Rag Apple Anne, recently completed a yearly record on three-times-a-day milking which she began as a senior-yearling, of 1,006 pounds fat from 17,915 pounds milk, testing 5.62 per cent. This, according to the Holstein Friesian Association of Canada, "surpasses, for butterfat, anything ever previously reported from any animal of any breed, anywhere in the world, in either the senior-yearling or junior-two-year-old classes." This heifer also calved within 400 days of the start of her lactation to qualify for the 305-day division, and thereby acquired another world record over all breeds for the senior-yearling and junior-two-year-old classes, of 864 pounds fat from 15,738 pounds milk, testing 5.5 per cent.

BY September 1, 1950, around 18,000 collective farms had been established in Yugoslavia, of which more than a third are the type in which farmers pool their land holdings, with no right to later withdrawal. More than four million peasants are involved and about 25 per cent of the agricultural land in Yugoslavia.

THE Board of Grain Commissioners for Canada has issued a final warning that on and after August 1, 1951, Red Bobs wheat will not be graded higher than No. 3 Manitoba Northern.

THERE will be eight scholarships available for the first time in the fall of 1951, worth \$75 each, and offered by the Board administering the Alberta Surplus Wheat Board Monies Trust. Anyone may apply who is eligible to attend an Alberta school of agriculture, and application forms may be secured from the Alberta Department of Agriculture, Edmonton, from any school of agriculture, or any district agriculturist, or district home economist.

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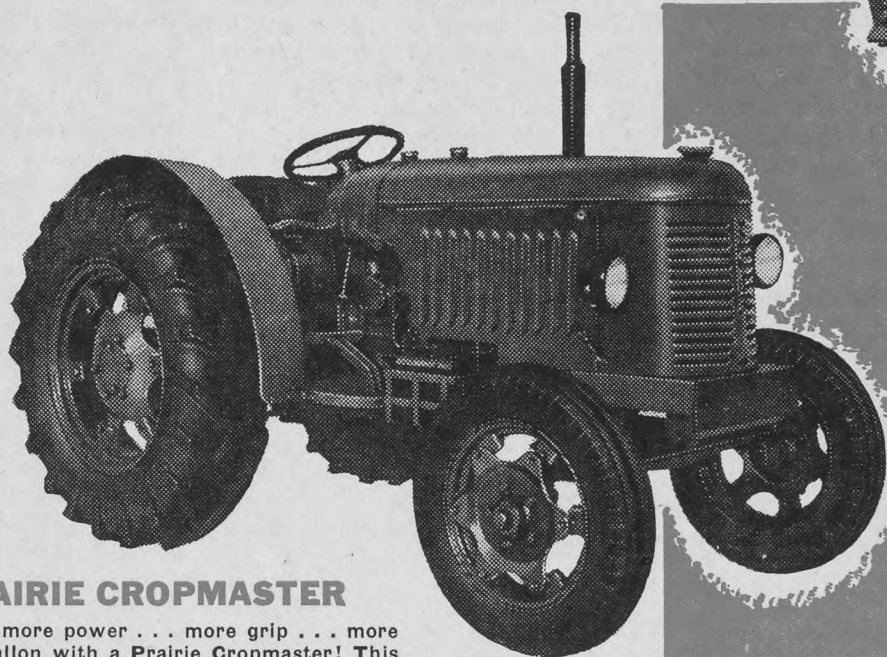
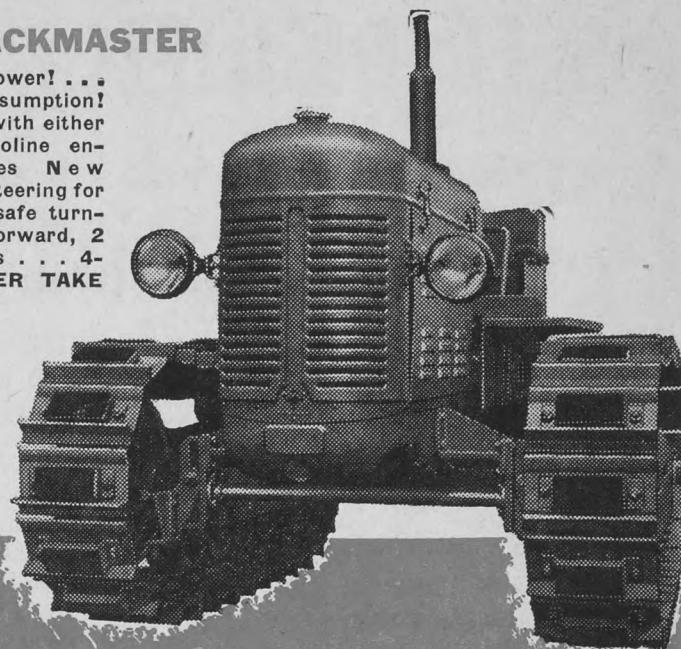
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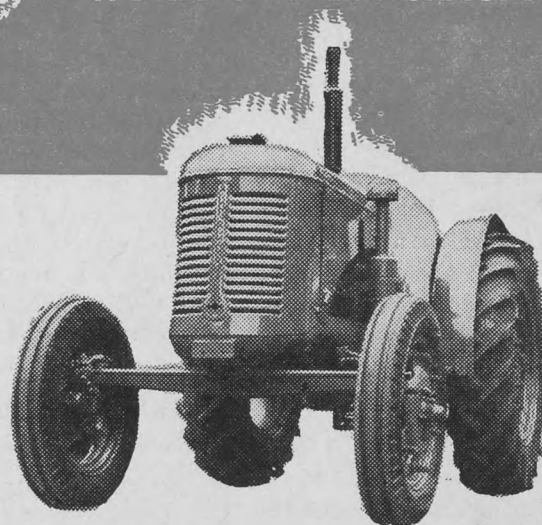
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2. Are all Seed Disinfectants "complete"? No. Only a mercurial seed disinfectant, like CERESAN M, does ALL 3 JOBS. Other formulations are designed to control only specific smuts on certain grain. Mercurials alone give you all-over smut protection on all seed, improve germination and protect against root-rots.

CERESAN M GIVES ALL SEED GRAIN 2-WAY PROTECTION

3. Is CERESAN M a complete Seed Disinfectant? Yes. CERESAN M not only stops smuts in ALL grains, but also forms a protective film around the seed which resists the attacks of soil-borne diseases. That's because CERESAN M is a mercury formulation . . . and *only* a mercurial seed disinfectant gives your seed this two-way protection. Likewise, a mercurial is the only seed disinfectant which will improve germination, especially of frosted seed.

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6. Does CERESAN M cost more? No. It costs you no more for two-way protection—only 3¢ to 4¢ an acre. The few cents you invest in CERESAN M pay you back dollars in bigger yields, cleaner grain, no smut dockage.

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CERESAN M is low-cost crop insurance against losses due to smuts and soil-borne diseases. This year and every year, treat all your seed with the disinfectant that protects *all* types of grain against both smuts and root-rots. Ask your farm supply store for CERESAN M—the *Complete Seed Disinfectant*.

CERESAN M GIVES YOU THESE 5 ADVANTAGES

1. CERESAN M contains mercury—the most effective seed disinfectant known.
2. Stops smuts in ALL types of grain.
3. Protects seedlings against root-rots and other soil-borne diseases.
4. Up to 30% increase in emergence or stand from frosted seed—improved germination of all good seed.
5. You need buy only ONE seed disinfectant. CERESAN M treats all seed grain and also flax.

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SEED DISINFECTANTS

Calgary Bull Sale

*Confidence in continuing prosperity for the beef business
was the dominant note at the biggest bull sale of the year*

CALGARY bull sale is traditionally a place where records are broken. The 1951 sale was no exception. The week-end before it took place southern Alberta was swept by one of the worst spring blizzards ever experienced, with the result that many exhibitors were not able to get their bulls to the sale on time. The whole schedule was shoved back, but even with this help many animals failed to turn up on time to go through the presale show ring. Quite conceivably this may have made a difference in the price bid on some bulls.

While fewer bulls were sold than in some previous years the aggregate price set a record, the averages for all breeds was up, and the top price of the sale, \$8,200, is \$200 higher than has ever been paid in a public sale ring in western Canada previously. Last year 1,162 bulls were sold for \$628,115, which is an average of \$540.55. This year 730 bulls brought \$817,325, or an average of \$1,119.63, more than double last year's price, which was considered good at the time. This is a measure of the confidence stockmen have in the continuing boom in the beef business.

As usual Herefords were the biggest lot: 507 bulls of this breed aggregated \$620,275, for the phenomenal average of \$1,223.42. The extent to which American buyers help this end of the sale may be gauged by the fact that 135 Herefords were bought for shipment across the border for an aggregate of \$172,875, which is an average of \$1,280 per bull; \$80 more than for Herefords bought for use in Canada.

THE highest price paid, the aforementioned \$8,200, was for Lorne Real's D 14D, C. D. McDougall's reserve champion from Champion, Alta. This bull was bought by A. C. Taylor for his Kelowna ranch. W. A. Crawford-Frost's champion Caerleon Royal Dandy 9D fetched \$7,200 and was bought by Ernest R. May for shipment to his ranch at Sunshine, Wyoming. Mr. Crawford-Frost sold one group of six bulls for an aggregate of \$22,100. J. M. Campbell & Son of Stavely sold a group of six for \$22,650.

W. J. Edgar of Innisfail sold a group of five bulls for \$13,400.

Other good prices for individual bulls were realized by Leslie H. Underwood, Penhold, who got \$4,150 for Royal Standard, sold to Geo. W. Bull of Midnapore; and C. S. Bailey, Camrose, who sold P.H.R. Larry 30th for \$4,300 to John Drever, Red Deer. Besides those listed above, the following breeders sold bulls for \$3,000 or over: L. W. Bond, Calgary; J. S. Cross, Vermilion; Loughheed Bros., Bowden; and the McIntyre Ranching Co., Lethbridge.

The sale brought out 153 Shorthorns which grossed \$129,600 or an average of \$847.06. Among the tops were Rannoch Remembrance sold by T. G. Hamilton, Innisfail, for \$3,500, to go to McArthur Bros., McArthur, California; Glenrobin Max 14th, a \$3,100 bull from the herd of W. L. Robinson, Vermilion, and bought by A. E. Banting, North Battleford; and Elburn Monarch, which P. W. Stefura sold for \$2,450 to Bryan T. Lovely, Walsall, Montana. Canadian buyers took all but 14 of the Shorthorn bulls to go under the hammer, whereas Americans took over a quarter of the Herefords.

Aberdeen-Angus breeders had every reason to be pleased with the results of their sale. The offering was small but choice; 68 bulls sold for an aggregate of \$65,428, or an average of \$962.13. There were few fancy prices paid, \$2,700 being the highest, for Enchanter's Destiny UA, from the university herd at Edmonton. He goes to Alfred Menke, Saco, Montana. While there were few high prices, it is equally true that there were no low ones, the spread between top and bottom being narrower than with the other two breeds, expressed either as money or as percentage.

Flint and Flint, New Norway, sold a good string of five for \$7,050. Roy Ballhorn had a group of four which made \$5,575, including the second highest black bull of the sale, Woodlawn Blackcap 56th, which went for \$1,800. Other good individual sales were made by S. J. Henderson, Lacombe; Milner and Steer, Edmonton; and W. L. McGillivray, Coaldale.



Milking Shorthorns on the farm of Peter Jamieson and Son, Alix, Alta.

[Guide photo]



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Runty Pigs Can Be Saved

WHAT makes a runt? Authorities at Iowa State College know five causes: Poor breeding stock, wrong nutrition of the sow before farrowing, poor feeding of the nursing sow, disease, and poor management.

These authorities state that over the U.S. as a whole, runty pigs average one to one-and-a-half per litter. This means an investment in such pigs at birth of \$5.88 per runt (U.S.) and \$10.00 at weaning. This estimate was based on current prices for corn and supplement, on the state average of six-and-a-half pigs saved per litter, and "the fact that feed represents about 80 per cent of the total cost of swine production."

Iowa experiments were based on observations that certain animal protein factor (APF) concentrates tended to make runty pigs catch up with the big ones. At Michigan it had been similarly observed that feeding B-vitamins tended to do the same thing. Two experiments were then conducted at Ames, the results of which were similar. In the second of these, nine lots, of eight pigs each, were fed for 70 days, which, at the beginning, averaged 21 pounds weight at 72 days of age. The first group of eight received the basal ration which was a complete, well-balanced ration suitable for the area. The other groups received this ration plus various vitamins and antibiotics. It must be remembered that all of these pigs were typical runts with rough hair, pot bellies, ribs that stuck out, heads and ears that appeared larger than their bodies, rear flanks tucked up, many of them scouring, and all gaunt.

The most successful lot of the nine were those fed aureomycin, an antibiotic and vitamin B12 in addition to the basal ration, at the rate of 20 milligrams and 10 micrograms, respectively, per pound of the ration. These pigs, all of which survived the full 70 days, and averaged 114 pounds at the end of the experiment, had made an average daily gain of 1.37 pounds, had a feed intake of 265 pounds per 100 pounds of gain, which was less than any of the other eight lots. The next most successful lot was a lot fed only the aureomycin in addition to the basal ration, while the third best lot was fed the B-vitamin plus a small amount of APF supplement which contained antibiotic residues in addition to B12. The lot fed only the basal ration, which would normally be fed by a good hog producer, only carried

seven pigs to the finish of the experiment, averaged .86 pounds daily gain, and required 308 pounds of feed for a gain of 100 pounds.

This experiment indicated clearly that the antibiotics were the significant factor in producing faster gains, and improving the efficiency of the feed fed. No one knows exactly how these antibiotics work. Two of the most commonly accepted theories, according to the Iowa experimenters, are that they suppress harmful organisms inside the intestinal tract of the animal, or that the antibiotic reduces the competition for the nutrients in the ration between the organisms inside the intestinal tract, and the pig.

It is, of course, better to follow proven swine production practices that help to prevent runts, than to try to make good market hogs out of runts. Nevertheless, these and other similar experiments go to prove that profitable market hogs can be made out of runty pigs.

Healthy Calves without Milk

WORKERS at the Wisconsin Agricultural Experiment Station have raised calves from birth which never tasted milk, not even the colostrum, or first milk of the dam. These calves were fed a synthetic milk on which Holstein calves gained a pound or more a day. Without exception Guernsey calves became ill between one and three days old, but recovered after treatment with streptomycin.

The synthetic milk devised will coagulate in from one to three minutes after rennet is added. Other "made-up" milks would not coagulate even after several hours, and caused diarrhea. These workers state that a high proportion of sodium to calcium prevents rennet coagulation, which does not occur if sufficient amounts of calcium are not present.

The new synthetic milk was made from nutrients reported to be present in normal milk. To cut down the amount of sodium in relation to calcium, lime water was used in place of bicarbonate of soda to dissolve the casein. In addition to other minerals, cerelose, fruit pectin, and lecithin from soybeans were added, plus from two to five per cent of cottonseed oil or butterfat oil. It is believed that the lecithin from the soybeans enables the calves to use fat. Up to three per cent or more of butterfat or other oils were added without ill effects. The fat can be added or withdrawn without any serious consequences, but in earlier tests a sudden addition of fat caused



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serious digestive disturbances. With lecithin the fat need only be emulsified instead of homogenized.

Raising Newborn Pigs

THE majority of hog producers are without electric light, and are not able to use this method of keeping newborn pigs warm. For several years I have been using the following method with success:

Make a box about 18 or 20 inches square and from three to five feet long with a fairly tight lid on top. Put the box in the aisle outside the pen, or fence off one side of the pen for it. I have mine outside, with an opening eight by twelve inches, near a corner of the pen.

With a piece of board, get the little pigs after feeding to go to the opening and into the box. After they are in I drop down a sliding door and they remain there until the next feeding time—one-and-a-half to two hours. Then let them out and put them back again after feeding, and again for their night feed around 11:00 p.m. Leave them in the box until morning. It will only be two or three days before the little pigs will go into the box themselves. They learn where the warmth is and I have had no losses through crushing.

In really cold weather, I put a couple of sacks over the top of the box; and later on when the weather is warmer and they are older, one can put a stick or board under the lid for ventilation. When the pigs are older, larger and tend to be crowded, a larger box will be necessary. It will be worth two or three days' trouble to raise all of the pigs instead of half of them. If one is late and some of the pigs are chilled when born, put them into water about as hot as one's hands can stand, lifting them in and out. This will bring most of them about, especially with the aid of a drop or two of brandy or whisky in their mouths. With a change of short straw every day they will do well.

In warmer weather I still use the box, but put the sow into a box-like pen which keeps her quiet. This I have near the center of the pen. I make two panels, each of from four to six rough, inch lumber (two-inch if planed), and fit the ends into grooves on the ends of the pen, leaving the bottom of each panel about seven to ten inches from the ground so the sow will not get under them when lying down. I put another board across behind the sow six inches off the floor so the little pigs can get around to each side to feed and not be crushed or stepped on.

After a few days the sow will be quiet and the boards can be taken out. I leave the panel on the side nearest the box for the little pigs, and have found this cheaper and just as good as the Hawley farrowing crate box.

What one must do is to save the animal heat which is enough to keep the newborn pigs warm. If a long box is made, it is easy in cold weather to block the back half off with straw, or a carton which fits snugly inside, and so keep the little pigs and the heat together in a smaller space.

I am sure that anyone who cares to try this method will save all or most of the pigs. If the sow is cross she can be put into the box-pen and left alone to pig, after which one can handle the pigs safely.—J. R. Tomlinson, Alberta.

Auction Selling Has Come

CATTLE are now sold by public auction rather than by private treaty in the alleys and pens of the stockyards at Saskatoon, Edmonton, Calgary and Lethbridge. The practice began on the three Alberta markets in July, and according to W. G. Dunsmore, Senior Livestock Products Grader, Calgary, immediately appealed to the producers, who were able to observe the whole transaction of selling their own or other cattle. He reports that buyers also supported the auction idea, because it gives everyone an equal opportunity to purchase, at a price, anything offered on the market. By the year end, at Edmonton, according to J. L. Pauley, District Supervisor, from 75 per cent to practically all cattle and calves, were sold by the auction method, though at first only one sale per week was held.

From Calgary it was reported that the problem of maintaining identification of the different lots and of selling only cattle of the same quality in the ring at one time, necessitated small unit groups, averaging approximately 1.9 cattle per lot. This involved two auction rings selling all classes of cattle and calves simultaneously. Auctioneers licensed by the provincial government are utilized, and normally two auctioneers are retained at each ring to alternate between selling and taking bids. Large unit groups are sold together if the cattle involved are of similar grade quality, sex and weight, and are the property of one owner.

Mr. Pauley reports that during the 12 months of 1950 there were 1,736,861 head of cattle, calves, hogs and sheep of Alberta origin sold for a total of \$151,135,444. Cattle numbered 470,354 and sold for an approximate average of \$194.15 which compares with \$109.08 in 1947. Averages for other livestock with 1947 averages in brackets are: Calves \$96.70 (\$29.49); hogs \$43.33 (\$34.04); sheep \$20.67 (\$10.56).

Horned Market Cattle

THERE is a great deal of discussion from time to time, particularly at livestock meetings during winter months, of the horned cattle funds operating in the prairie provinces, and the effectiveness of this penalty in preventing the marketing of cattle with horns.

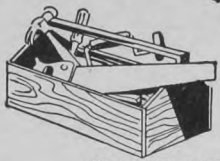
At the Edmonton market in 1950, the percentage of cattle marketed with horns on was 20.4 per cent. At Calgary the percentage was 15.5 per cent; at Lethbridge, 15.9 per cent, and at Winnipeg 13.4 per cent. For Alberta as a whole, the general average of the markets at Edmonton, Calgary and Lethbridge was 17.4 per cent, an increase of about three per cent over 1949. It is significant, however, that the average of horned cattle marketed through the several community auction sales in southern Alberta was only 8.6 per cent.

Penicillin and Mastitis

ELEVEN dairy herds in Wisconsin have been studied in connection with mastitis, and the study has been continued for long enough that several general conclusions have been drawn.

The first is that systematic treatment of all cows having mastitis caused by streptococcal organisms soon reduces the amount of mastitis

Building Ideas



FOR THE Farm

PRACTICAL HINTS
ON MATERIALS AND METHODS

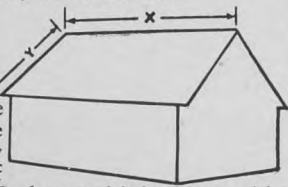
The natural waterproofing qualities of asphalt have been utilized by man for some 5,000 years. In fact, Noah used it to caulk the seams of the Ark. Modernly processed, it is the basic component from which Johns-Manville Asphalt Roofings derive their superior waterproof and weather-defying qualities.

THE HIGH COST OF "CHEAP" ROOFS

It takes as much work and as much time to lay a flimsy roof as it does a sturdy one. And the less you pay for roofing, the more it usually costs in trouble and maintenance. The Johns-Manville measure of a good roof is one that will give years of completely dependable service. To be sure of dependability, insist on roofing that bears the J-M trademark.

HOW TO MEASURE A ROOF

Multiply the length of the roof (X) by the length of the rafter (Y) then multiply that total by two. This gives you the number of square feet in the whole roof. To find the number of "squares" of roofing needed (any type) simply divide the total square feet by 100. (A "square" of roofing covers an area 10 x 10 feet.)



HOW LONG WILL A ROOF LAST?

That depends of course on the grade of roof you apply. For long-lasting protection against fire, weather and time, Johns-Manville makes various roofs that are particularly suitable for farm buildings. J-M Slatekote Roofing is one of the best sellers; it is an economical roll roofing, surfaced with colourful mineral granules which protect the asphalt coating from the sun's rays. J-M Flexstone Roll Roofing, made on a heavy base felt of mineral asbestos fibres gives extra resistance to fire and weather. Johns-Manville Roofings also include various Asphalt Shingles, excellent and economical for farm homes and other permanent buildings. Flexstone Asphalt Shingles, because of their asbestos felt base, are also strongly recommended. J-M Roofings come in attractive colours, are easily and quickly applied, and will give long years of dependable service at low cost.

TO INCREASE LIFE OF ROLL ROOFINGS

On smooth surfaced roll roofings apply a good roof coating every few years. Applications of J-M Regalume, J-M Asbestos or J-M Regal Roof Coatings will add many years to a roof's service. For small repairs to flashings, etc., use J-M Asbestos Caulking Putty in the handy new squeeze tube.



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Or write to Canadian Johns-Manville, Dept. 779, 199 Bay St., Toronto, stating roofing material you are most interested in.

greatly. Furthermore, the benefits of systematic penicillin treatment can be preserved by good management. If good management is lacking these benefits may be lost in from three to 18 months. The severity of many mastitis cases will be reduced, if individual cows are treated as mastitis develops, but this treatment does not reduce the number of cases which appear. Careful management, rather than the penicillin treatment, appears to be the most important factor in mastitis control. Finally, disinfection and sanitation, good milking, replacement of incurable cows with home-raised heifers, and proper milking order, seem to be the most important management practices.

Gestation Period of Cows

THREE Wisconsin research workers checked the records of a large Holstein herd to discover, if possible, why some cows carry a calf longer one time than another, and why cows vary in the length of their gestation periods.

They found that, on the average, bull calves are carried about two days longer than heifer calves. Larger cows carry calves slightly longer than lighter cows; and cows carrying calves longer, gave birth to slightly heavier calves.

It would appear that inheritance of the calf, from individuals other than its dam, is responsible for approximately 77 per cent of the variation in the length of gestation periods in cattle. The amount of inbreeding apparently has no effect on the length of the gestation period, nor does any particular year seem to bring different results from any other year. Likewise, if a cow has a positive Bang's reaction, but does not abort, it does not seem to affect the length of the lactation period.

Poisonous Weed

A NEW weed resembling Russian thistle is reported by the United States Department of Agriculture to have caused a considerable amount of sheep poisoning, in the drier land of the western states. There seems to be no common name for this weed, which botanists call *Hologeton glomeratus*.

There is no evidence, apparently that this weed has entered Canada, but Dr. H. A. Senn, Division of Botany and Plant Pathology, Ottawa, believes that the dry, sparsely populated, sheep-grazing areas of British Columbia, Alberta and Saskatchewan would be the most susceptible parts of western Canada if this weed crosses the border.

It was first reported in Nevada about 1935, and has spread to Idaho, Wyoming, Utah, Arizona, Montana and California.

Warbles Come Each Year

IF you treated your cattle for warbles last year, it will not protect you in 1951, though it is to be hoped that there will be fewer warbles in evidence. W. Lobay, Supervisor of Crop Protection in Alberta Department of Agriculture, says that only one out of four of the cattle population of Alberta was sprayed last year for warbles, despite the fact that warble flies cause an estimated loss in weight of 30 to 40 pounds per animal per season. He estimates the average loss per head at \$8 per animal, and the cost of two or three

sprays at not more than ten cents per head.

Two or three treatments are needed, 28 to 30 days apart. The warble season extends from March to May in the prairie provinces, and while it is more economical to use a power spray outfit where pressures of 350 to 400 pounds can be applied, the owner of a few head can wash the backs of his cattle, using a stiff brush to remove the scab and kill the grub through the opening, with the warble wash. If you cannot obtain warble powder from your local drug store, consult your district agriculturist, or agricultural representative.

You can make up your own solution with this formula recommended by the experimental station at Swift Current: Five pounds Derris powder (five per cent rotenone); 10 pounds wettable sulphur, or three pounds neutral soap; and 80 gallons water, preferably soft.

Success with Livestock

SUCCESSFUL livestock farming involves four essential factors. These are breeding, disease control, management and feeding. If all four factors are fairly well looked after, the most important single factor in the economics of production is feeding.

Feed accounts for from 50 to 65 per cent of the cost of producing milk and eggs, but from 80 to 85 per cent of producing pork or beef, according to American authorities.

Carbohydrates, or energy feeds, are fairly well looked after because they are predominant in home-grown grains such as wheat, oats, barley and rye, as well as in rough feeds such as hay and straw. The protein, or growth element in feed, is still a critical problem in most feeding.

Both carbohydrates and protein are essential factors in feed, but the balance between the two requires to be finely adjusted for greatest success. It also needs to be different for different purposes, such as milk production in dairy cattle, wintering over of beef cattle and the finishing of all kinds of market stock. Necessary also are the vitamins and minerals.

The protein in roughages is important, not only because it is essential, but because it is usually the factor in shortest supply in our farm-produced feeds and comparatively expensive if it must be purchased. In the prairie provinces we do not ordinarily produce high protein roughages. Most of our hay crops are not naturally of high protein content, and a great deal of our hay is cut after it has matured too far to permit of first-class quality, even if it is well handled.

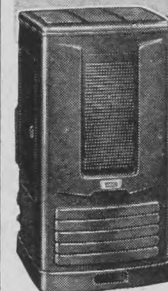
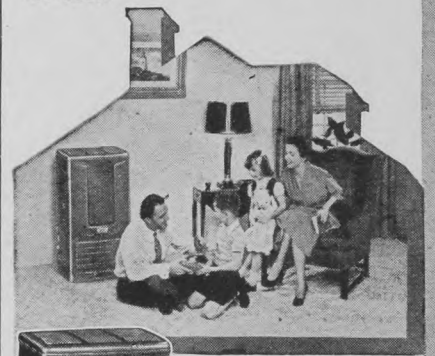
Expert classification of 667 samples of hay and silage in Wisconsin revealed that only five per cent could be judged excellent, 25 per cent good, 45 per cent fair, and the remaining 25 per cent poor. It is not likely that a similar number of samples from the prairie provinces would show even as satisfactory classification as this. If we could grow more alfalfa or more grass-legume mixtures, our situation would be improved. We could grow more of these roughages than we do, and thereby grow more economical feeds for livestock. We could also produce a better quality hay from the crops we do grow, by making a special effort to cut at the proper time and get it into the barn or stack while it is still leafy and green.

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Moisture

Continued from page 12

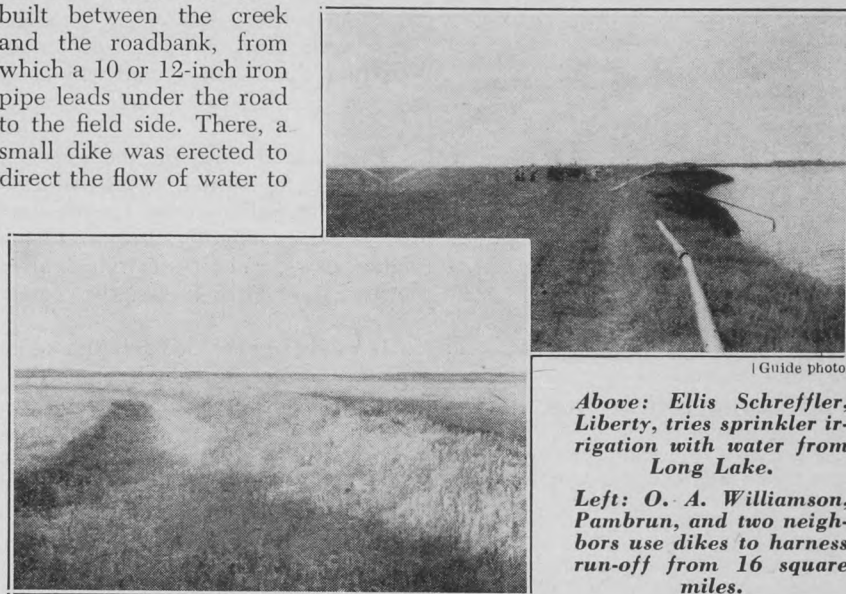
there were good crops (up to 45 bushels per acre) until 1929, and fair crops from 1940 to 1945—about half the time. The remaining years have been unsatisfactory, even for a man who has the reputation of being a first-class farmer.

At Rouleau, south of Regina, on the farm of Harvey Tutt, I saw a 500-acre flood-irrigated crop in beautiful condition, which was probably badly frosted a month later. Mr. Tutt was away from home when I called, and I did not see any of the field except the side nearest the buildings. Along this side runs a road, on the opposite side of which is a creek, which evidently runs very full in the spring. A strong cement cistern had been built between the creek and the roadbank, from which a 10 or 12-inch iron pipe leads under the road to the field side. There, a small dike was erected to direct the flow of water to

hay. About three miles west of the Williamson farm is the 1,500-foot Pambrun Dam which is being constructed to hold 2,200 acre-feet of water and to serve 16,000 acres.

I LATER visited the Shepherd Brothers of West Plains. There, the two well-known brothers, Tom and George, have for years operated four sections of deeded land, and approximately the same amount of leased grazing land. On this they run about 250 head of beef cattle. The cattle are wintered in a sheltered spot on the part of the ranch first settled. Last year there were 200 acres of crop and 40 acres of summerfallow. This year the proportions will be reversed.

On this ranch the water problem was somewhat complicated. Flood water tears down a coulee for four or



Above: Ellis Schreffler, Liberty, tries sprinkler irrigation with water from Long Lake.

Left: O. A. Williamson, Pambrun, and two neighbors use dikes to harness run-off from 16 square miles.

the corner of the field. I was told that for 12 days and 10 nights a D8 Caterpillar operated a powerful pump which drew enough water from the creek, through the cistern, to flood the 500-acre field. The land here is quite level, so level, according to a neighbor, that there was never more than four inches of water in any one spot over the entire field, but I was not able to verify this.

At Pambrun, west of Gravelbourg, I met O. A. Williamson, who homesteaded there in 1908. He has three quarter-sections of land north of his buildings, across which the drainage water from 16 square miles of country flows each spring. There is a fall of eight feet diagonally across the tract, and on it the P.F.R.A., some time ago, laid out six dikes with a combined length of three miles, along the diagonal opposite to the flow of water. There are three concrete spillways provided, to let the water through from one section to another, and likewise drainage pipes through the dikes so that the last of the water can be drained off.

Mr. Williamson is thus able to flood-irrigate approximately 150 acres. When he is through with the water, two neighbors to the east get it, the nearest of whom is able to flood about 70 acres, and the second neighbor about 100 acres. These dikes have been working successfully for seven years, since the first of them was constructed. It enabled Mr. Williamson to raise hay on the land and to have some for sale. For a time his neighbors bought some of his surplus, but later concluded that they might as well dike their own land and raise their own

five days in the spring, and would seem to offer a splendid opportunity for impounding enough of it to guarantee feed supply. However, the hill is so gravelly that no place has yet been found where an earth dam could be tied into it successfully. As an alternative, the experimental station at Swift Current did some terracing a few years ago, and now alfalfa and crested wheat grass grow on the terraces. These are located in the field with a fall of 80 feet to the mile. The terraces have a one-foot fall between each pair, and because the flood may be over in a very few days, four or five of the terraces are filled to the brim at one time.

I ALSO talked with E. L. Gray in Regina, who is in charge of small water development for the P.F.R.A. Mr. Gray was much concerned about water conservation in the P.F.R.A. area, and I found him fairly enthusiastic about sprinkler irrigation. He had a small system installed at his own farm in Yellow Grass, and he believed it was very useful and warranted, as a measure of security of food, feed and seed. He used his system primarily to irrigate the garden, and to pump the water from sloughs early in the spring into the summerfallow where it would be stored instead of evaporated. Water from a dugout, he believed, would irrigate from five to eight acres of land; and with water from one or more dugouts in addition to the sloughs, he felt that the necessary acreage of registered seed, the garden and minimum feed supplies would be taken care of.

The only sprinkler system I saw in actual operation last summer was on the farm of Ellis Schreffler, of Liberty,

Saskatchewan. Mr. Schreffler operates a section or more of land, of which a half-section is located on the arm on the west side of Long Lake. This was his first experience with irrigation, and he had completed irrigating 75 acres. His average yields in previous years without irrigation had been under 10 bushels per acre, and he felt that, with a water supply so handy, he could not lose. He had intended putting a man on the job all the time, but the man he had had left, so he was doing it himself.

Mr. Schreffler had invested \$2,300 or better, in the equipment, including pump, piping, nozzles, and intake pipe. He had 1,100 feet of piping, in all, ranging from three to six inches in diameter. As I recall it, a 20-foot length of six-inch pipe with couplings cost \$38. His pump cost about \$425 and this was powered by his own Farmall tractor, which could deliver 40 horsepower on the belt. The pipe was equipped with 17 nozzles; and with the pump delivering 500 gallons per minute, with a 60-foot throw from the nozzles, he was able to irrigate an acre per hour, at three acres, or three hours, per setting.

He said that two men could reset the equipment in half an hour, and that he calculated that it required two gallons of gasoline per acre. His intention at the time of my visit was to increase his piping to a full quarter mile, which would mean about another 220 feet.

THUS, there are many ways of irrigating. The problem is to get the water on the land at the time it is needed, and as often as needed. Where the only source of irrigation water is spring flooding, there is not much choice. Where water can be impounded and the gravity system used, security rests in the hands of a skillful and experienced irrigator. Where land is not level enough for gravity, and a sprinkler system is required, the problem becomes one of water supply and a capital investment sufficiently high to go over the ground as often as necessary and with as much water as required to do the job.

"Basically," says Hans Korven, of the Swift Current Station, "the water demand of crops in moderately hot areas is about one-fifth of an inch per day, say six inches per month. An irrigation system, where irrigation is a regular part of the farm business, must be able to take care of this peak. It must be able to put six inches of water on in, say, two periods of 10 to 12 days each, leaving several days during the month for repairs and other demands on time. Where irrigation is not intensive, smaller equipment can be used, and the process of storing water can begin right after seeding, or before, with a slower rate of application.

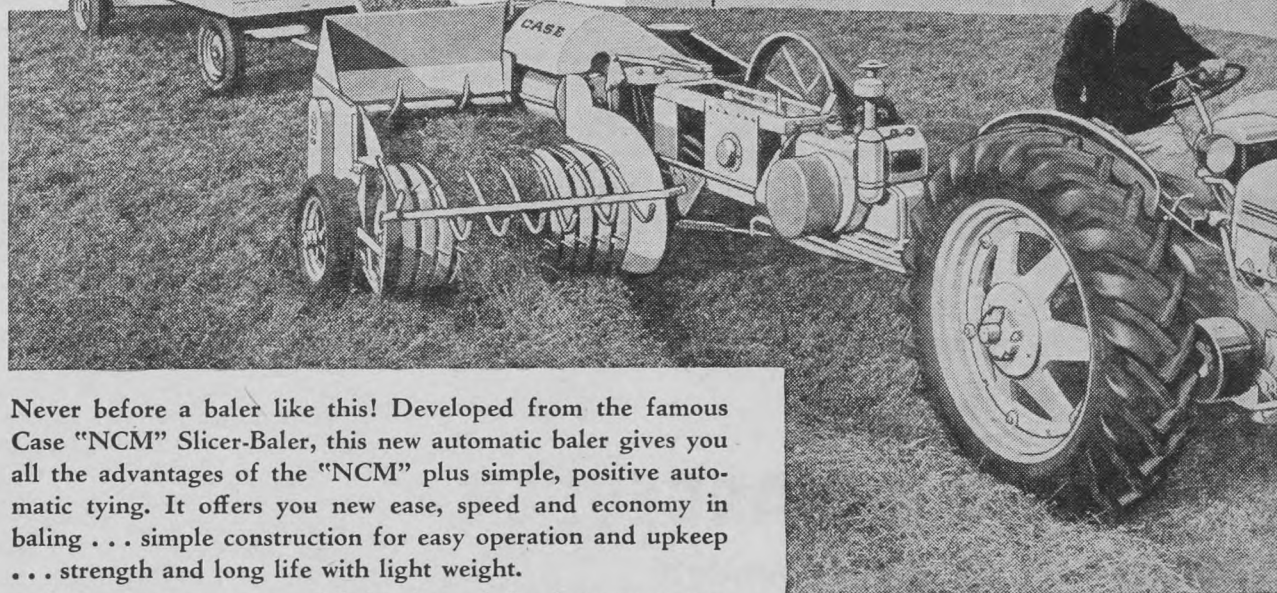
"It is also to be remembered that wind is a hazard with sprinkler equipment. Tests have shown that wind at 17 miles per hour reduces efficiency 45 per cent. At 10 miles per hour the reduction in efficiency is 35 per cent. Even where there is little wind, and protection from a shelterbelt, the maximum efficiency indicated was 81 per cent. These few simple facts are, in themselves, sufficient to make the point that no sprinkler system can reach its maximum efficiency unless there has been sound engineering planning before, and during, installation."

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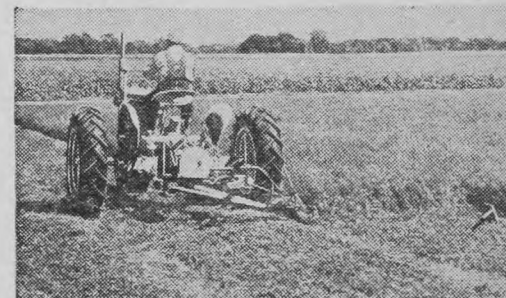


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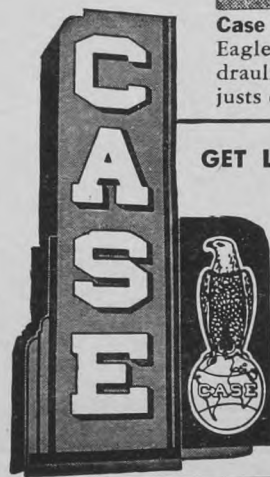
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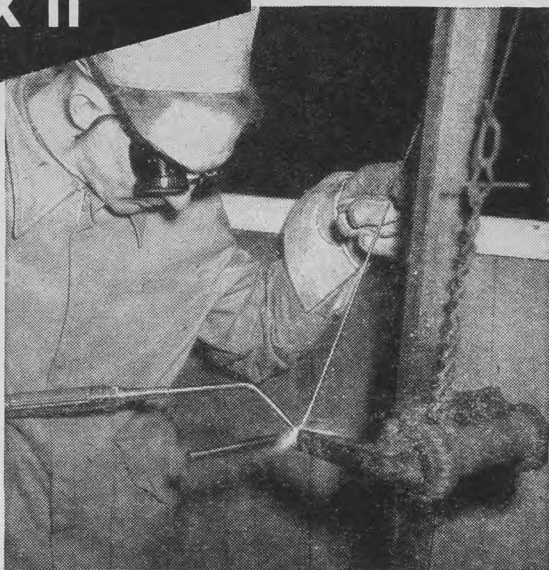
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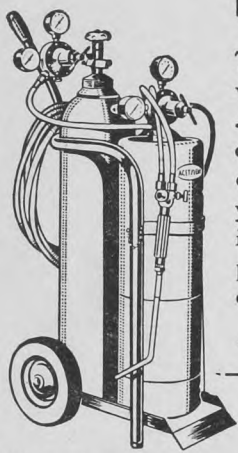
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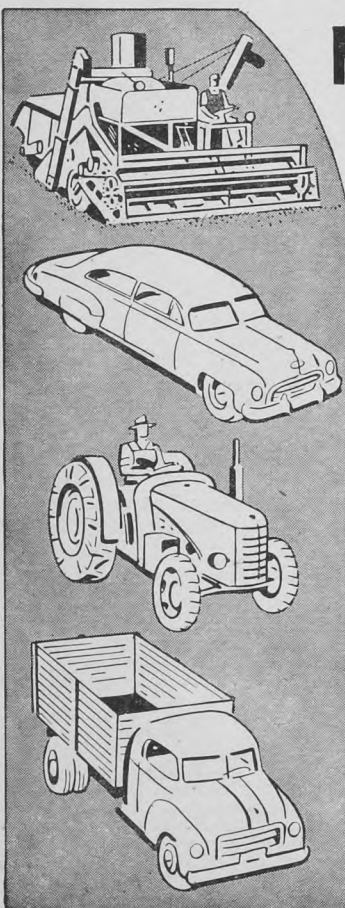
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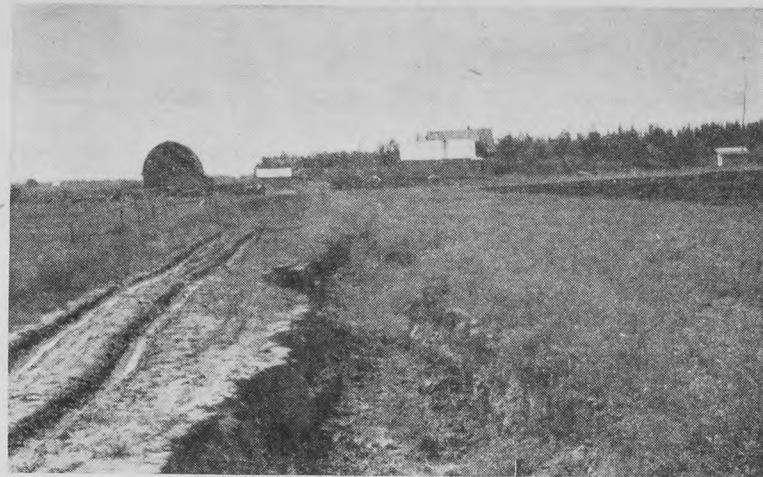


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FIELD



[Guide photo

Fine grey soils such as this in the Peace River district erode very easily. One rain did it.

Treat Seed This Year

THE importance of treating seed grain this year, before sowing, has been emphasized by plant pathologists, who, at a meeting held not very long ago in Saskatoon, thoroughly discussed the recommendations they would make this year in view of the amount of frosted grain that would probably be seeded. Owing to the widespread damage from early fall frosts in 1950, and the fact that frost reduces the ability of seed to germinate, proper consideration of seed treatment is more than usually important this year.

On the basis of numerous tests carried out at Saskatoon and Winnipeg, it is emphasized that the effect of seed treatment on the seed and its germination will depend on the type of frost injury. Some improvement in germination may be expected if seed is used that has only been bran-frosted, but not when the seed is frosted severely and shrivelled.

The following recommendations are from the Division of Botany and Plant Pathology, Science Service, Canada Department of Agriculture:

Treatment of seed with formaldehyde (formalin) is not recommended, because this treatment injures germination. Wheat should be treated at least 24 hours, and oats and barley at least a week, before sowing.

For the loose smuts of wheat and barley, ordinary treatments with organic mercury compounds are not effective. Use the hot water treatment, or obtain registered seed.

Other treatments are chemical fungicides which are manufactured and sold under trade names. Follow the manufacturer's directions strictly.

For stinking smut or bunt of wheat, seedling blight of wheat, oats or barley, loose and covered smuts of oats, covered smut and false loose smuts of barley, and for seed rotting of rye and flax, the following compounds, arranged in alphabetical order, and not in order of merit, are recommended: Agrox C, Ceresan M, Leytosan, Mergamma C, and Panogen.

For stinking smut or bunt of wheat only, Anticarie, an additional commercial compound, is also recommended.

Mergamma C also protects seedlings from wireworm injury.

It is important to remember that most of the chemical fungicides sold at present in Canada, contain mercury in some form. These disinfectants are, therefore, poisonous. Treated seed should be clearly labelled and kept

away from all livestock or poultry. Any treated seed not used should not be carried over to next year, but sown for green feed or sold as seed.

Treatment of seed will be more effective if the seed is thoroughly cleaned before treatment.

Some varieties of grain resist certain smuts while others are very susceptible, or only semi-resistant. More complete information about seed treatment is available in "Treatment of Cereal Seed" issued last year as Farmers' Bulletin 161 by the Canada Department of Agriculture and available from any experimental farm or agricultural representative's office.

Painting Kinks

ONE of the best painting kinks this writer has ever known was told to him by an experienced painter a short time ago. The painting expert said, "When you go up a ladder with a bucket of paint it is usually best to have only a small amount of paint in the bucket. Don't go up with a full bucket." Then the painter went on and gave his reasons. These were:

(1) If you should happen to drop the bucket and the paint spills out, you won't lose much paint and the possibility of damage to property will be less; (2) you needn't be as careful in handling the paint as you must be if the bucket is full, hence you can work faster; (3) if you must use your hands for some other purpose and must let go of the brush temporarily you can place it upright inside the bucket; and, most important of all—(4) when dipping your brush you are not obliged to "look" for fear of dipping too deep or not deep enough—you know by the "feel" that when the brush touches bottom you have the desired amount of paint on it.

Point four is particularly valuable when you are in a "tight place" as one sometimes is when on a ladder and it is difficult or even impossible to look downward. This, therefore, is a safety measure as well as a time-saving kink.

Another of this expert's pet kinks is to mix paint with putty when putting the windows. He uses paint of the same color as used on the building or windows so that it will not be necessary to paint the putty after it is in place, which is always a rather difficult and time-consuming task. In fact, putty is too often permitted to retain its own natural grey color during its whole life despite its

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disagreement with the color harmony of the remainder of the building.

This expert has also found that he can make the putty stick better by first cleaning the window frames and adding a coat of paint before using his paint-mixed putty. Allow the paint to become almost dry and then apply the putty-paint combination. The putty will then adhere very well—much better than without the initial coat of paint.

And finally, this expert has learned that the putty will stick better if the window pane is given ample clearance all around so that a "crack" will exist between the edge of the glass and the wood into which putty can be packed. In other words, don't make a tight fit when you put in a window pane; a "loose" fit is better if putty is to be used, and the reason why is logical and obvious in view of the above.—W. F. Schaphorst.

Seed Time Notes

THE Experimental Station at Swift Current estimates that Saskatchewan farmers alone will seed more than 50,000,000 bushels of cereal grains this spring. This probably means that farmers in the four western provinces will seed at least 100,000,000 bushels. The cost of this much seed alone is big business, to say nothing of the time and equipment necessary to put it into the ground, and the huge acreage on which it will be seeded. Using poor seed would seem to be very costly.

REGISTERED seed is safe seed, because its pedigree is known; it is pure; and it is good. This does not mean that any variety of pedigreed seed will suit your farm. Choose a variety that is known to be adapted to the soil and climatic conditions of your community.

THE common causes of poor seed, in addition to contamination from mixtures of other grains and weed seeds, are: Frost, immaturity, weathering, toughness, heating, mechanical damage, molds, and seed-borne diseases. Some farmers guarantee themselves a poor income for the year by seeding uncleaned, untested, weed-contaminated seed. Such farmers could not make money producing grain if wheat were \$2.50 per bushel.

IN the spring of 1950, the Swift Current Experimental Station tested the double-disk drill, press drill, deep-furrow drill, one-way disk seeder, and the disk with seed box, on land that was fairly level, and on other land which had been badly ridged by tillage in previous years. The object was to obtain information as to which was the best implement for seeding. The duck-foot cultivator was used just previous to seeding with seed drills. Disk-type implements worked and seeded the land in one operation, but a packer was pulled immediately after the machine. The soil was in fairly good condition for germination, and fair to good stands were secured. Though only one year's results have been obtained, the following are the yields, with the yield in the ridged field given in brackets: One-way disk seeder—21.5 (22.7); press drill—20.7 (19.8); disk with seed box—20.1 (14.5); double-disk drill—19.3 (18.5); deep-furrow drill—18.9 (17.6).

MANY factors combine to make a good crop. Not the least of these is the shallow, uniform depth of tilled soil required to permit the seeding machine to place the seed properly into the ground. Machines designed for large level fields are often used in places unsuited to their operation. Sharply rolling fields limit the size of implement that can be used. The seeder should be able to penetrate all parts of the field at a uniform depth and eliminate ridges and hollows.

IT is possible to make satisfactory germination tests at home in some seasons by growing the grain in a box of soil or sand, at room temperature. The Brandon Experimental Farm points out, however, that such tests may not prove satisfactory this year, because fall conditions in 1950 may have resulted in seed of unusual dormancy (rest period). This rest period must be broken by pre-chilling the seed before a satisfactory germination test can be made. Equipment for pre-chilling is obtainable only at larger seed testing laboratories. Where germination tests are made at home it is very important that an average sample of the grain be secured. To do this, take a dozen handfuls of grain from different parts of the bin and at different depths. Mix them all together very thoroughly and count out several lots of 100 seeds each, being sure to take them as they come and not to select only the good-looking seeds. Sow each 100 seeds separately at a uniform depth of from one to two inches and keep the soil moist. Count the number of strong seedlings that have emerged at the end of two weeks. This number will indicate the per cent germination (60 strong seedlings equals 60 per cent of 100 seeds planted). Average the result of several lots planted to get the average percentage of germination for the bin.

Grass and Legume Effect

RESTORING soil fertility to land that has been ill-treated, either by overcropping, soil drifting, or by other forms of erosion, is a long and difficult process. Complete restoration to the condition found in virgin soils is not often practicable, even if possible. The maintenance of a fair level of cultivation necessary for economical production is, however, a vital necessity. This can be achieved only by putting the land down to grass or legumes at more or less regular intervals, supplemented by such fertilizers as barnyard manure and commercial compounds, which are now coming into use in prairie Canada.

Toward the close of the thirties, after the drought and soil drifting had combined with continuous cropping over a long period of years, to deplete the soil fertility of large areas in southern Manitoba, experiments were begun in that area to restore lost fertility. District experiment substations in several locations, as well as the Dominion Reclamation Station at Melita, were used to record the progress that may be made. Soil samples taken in grain fields before regrassing began, were analyzed, together with samples taken in virgin soils remaining on the same farms. These indicated that after 60 or more years of exclusive grain growing, the organic matter and nitrogen content had been reduced by more than 50 per cent.

On the Melita Station, some of the eroded soil contained not more than 1.5 per cent organic matter and .08 per cent nitrogen, in the first 12 inches of soil before regrassing. Even after having been in alfalfa for seven years, the organic matter only increased to two per cent and the nitrogen to .14 per cent. After eight years, in a mixed pasture of brome and alfalfa, the organic matter in similar soils had risen to 3.1 per cent and the nitrogen to .18 per cent. On the Crystal City substation, four years of brome hay raised the organic matter in the soil from 3.1 to 4.2 per cent, and the nitrogen from .17 to .21 per cent. Similar results were secured at other substations.

These experiences indicate that long-continued misuse of the soil cannot be wiped out and the losses regained, by a few years of good farming. It is interesting to know, however, that at the Lyleton substation, the increased fertility in the soil following seven years of crested wheat grass, amounted to an additional 15,200 pounds of organic fibre and 740 pounds of nitrogen. This, compared with the fertility in virgin soils, would indicate that the gain in fertility at the end of the eight-year period had amounted to approximately 12 per cent.

Simple Farm Grain Dryer

WHEN warm spring weather arrives, tough and damp grain stored on farms is likely to present a very serious problem. The basic principle underlying the drying of such grain is to get air moving through it—preferably warm air. Some farmers have fans already on the farm, of a type which can be used successfully. George E. Bryce, Specialist in Agricultural Engineering, Manitoba Department of Agriculture, points out that the most satisfactory fans for drying 100 bushels or more, will require at least a 2 h.p., or stronger, electric motor. When air is being forced through grain one should be able to feel it coming through from the top of the layer. This means that the depth of the grain is important, since it will require about four times the power to force air through grain if its depth is doubled. Four feet in depth is believed to be about the maximum for wheat. Air blowing through a deep layer will dry at the bottom and cause condensation near the surface of the grain, if the air is either too cold when it reaches the surface, or is not moving fast enough. The result of this condition may be

that the grain will swell and the progress of the air passing through the grain be slowed down.

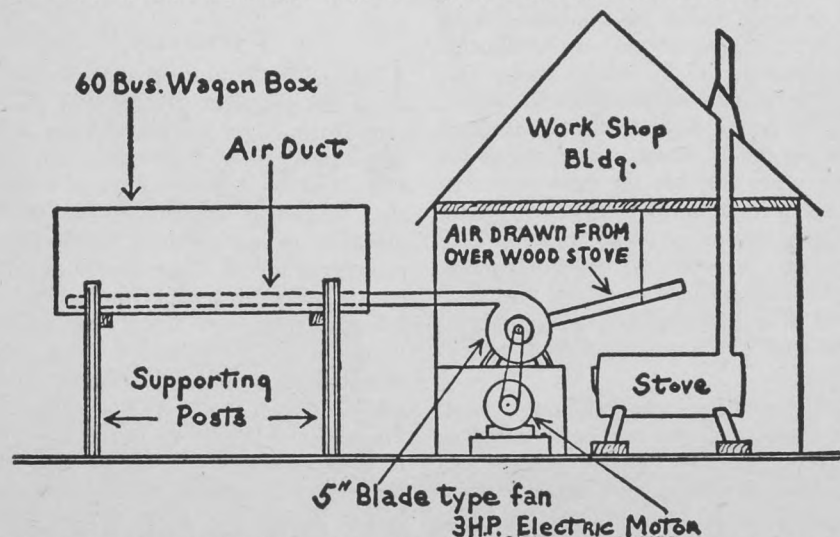
Forced air, with added heat, says Mr. Bryce, is the method recommended for all-around satisfaction. The accompanying illustration shows a plan of a farm grain-drying unit on the farm of H. C. Enquist, Minnedosa, Manitoba. It consists essentially of a motor-driven fan located inside the wall of a workshop heated by a common type of wood stove. The air is forced outside of the building into an air duct laid in the bottom of a wagon box holding 60 bushels of grain, and supported on posts to the level of the fan outlet.

Mr. Bryce reports that five cords of wood were required to dry 2,000 bushels of wheat and barley, from a moisture content of from 20 to 22 per cent down to less than 15 per cent. It required about 15 hours to dry a 60-bushel load.

Large capacity units to take care of a truckload of 125 to 200 bushels of grain could be constructed, but the grain should be kept to about the same depth as in the smaller unit. The heat supplied would approximate the amount required to heat the average six-room house, and might require several smaller heat units, or a small furnace. Care should be taken that the air entering the grain is not over 120° F., to avoid damage to germination. Mr. Bryce points out that fan capacity, as a rule, is great enough that much lower temperatures prevail.

Hazard of fire should be avoided, and care taken that the air flow does not create too much draft for the heating unit. If gasoline power is used, the direct exhaust gases should not be allowed to pass through the grain.

Plans for more elaborate grain dryers are obtainable (see The Country Guide, February, 1951, page 54) but simpler plans such as this are more likely to be adapted to most farms. Where no special drying unit is attempted or considered practicable, cleaning the grain and moving it under dry air conditions will help to reduce dry moisture content. "Leaving grain in shallow layers, and on raised perforated floors, with ventilation under and over the grain will also help," says Mr. Bryce, "as long as the air passing over and through the bins is not too humid. Ventilating caps on grain bins have been used, which draw air out of grain bins on windy days. These will help dry grain over a long period, particularly if air can pass through the floor and the depth of the grain is not over one or two feet."



In this dryer the air duct is a one by eight-inch board with a half-round covering of heavy wire mesh, with fly screen outside.

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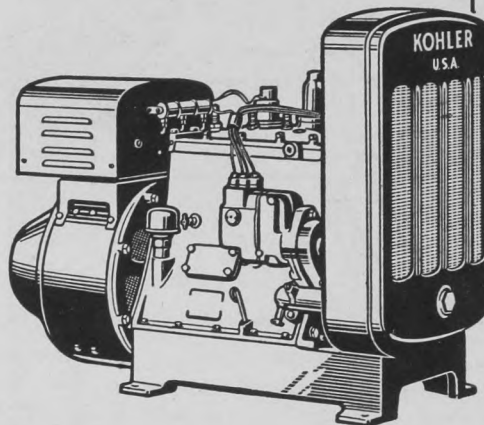
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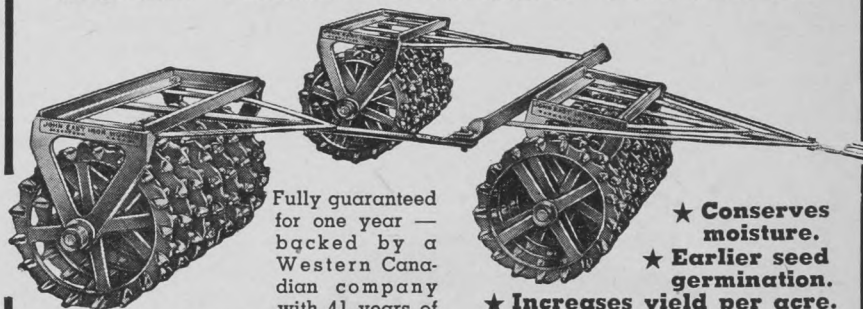
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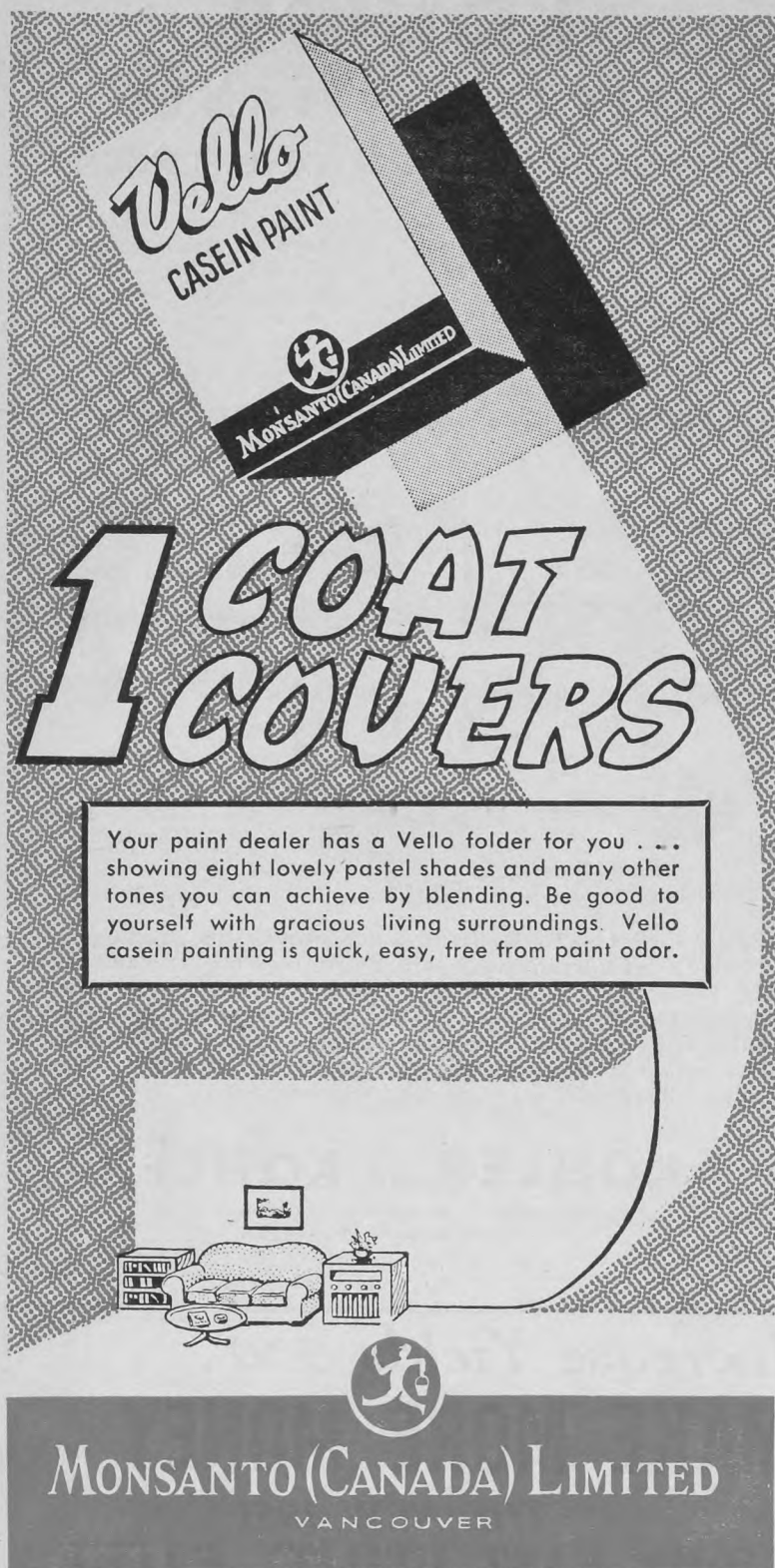
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Crop Rotations

Continued from page 13

wheat, coarse grains version of this rotation generally has proved more satisfactory.

ALTHOUGH medium and long-term rotations are not in general use, they are under study in mixed farming areas and the grey-wooded soil zones. Such rotations, varying in length from four to eight years, have their chief strength where the short rotation has its weakness. In other words, they have a value in combating wind and water erosion, maintaining soil fertility, controlling weeds and providing feed and forage for livestock. A secondary advantage is that they lead toward a more stable type of agriculture, based on grassland, coarse grains and livestock.

An eight-year rotation has been used and found most satisfactory on many of Manitoba's experimental substations. This rotation uses the sequence fallow, wheat, grain, nursing hay, hay, pasture, break and fallow, grain, grain. Bonar Gorby, supervisor of illustration stations in northern Manitoba, claims several advantages for longer rotations. The first of these is that forages are down long enough to really benefit the soil. Added to this, fallow occupies only an eighth of the farm area. Cross-fencing is reduced to a minimum, because fallow and pasture are adjacent. Weed control is facilitated by combining the useful effects of grass with cultural control. Finally, labor is well distributed throughout the cropping season, and there is no need to break the pasture field in late summer, as must be done when the grazing is needed in the spring.

One of the disadvantages of this rotation is the necessity of dividing the farm into eight fields, which, in many cases, are relatively small. Added to this it is only suited to areas of adequate precipitation; and it becomes necessary also, to maintain cattle in order to utilize the hay and pasture. On the other hand it stabilizes the soil, improves structure, diversifies the farm operation and aids weed control. Yields have also been improved. Ten-year records for eight Manitoba substations show wheat yielding 26.6 bushels per acre after fallow and 27.7 bushels per acre after sod breaking. Coarse grains after sod breaking have averaged 36.0 bushels and hay throughout the study yielded 1.40 tons per acre.

Two medium-length rotations that have some value in combating wild oats have been tested on the illustration station at Weirsdale, Sask. The first rotation is summerfallow, wheat, coarse grains, hay for three years, and the second is wheat, coarse grains for two years and hay for three years. In the first rotation the yield of wheat and coarse grains was 27.2 and 27.7 bushels respectively, in comparison with 23.2 bushels of wheat and 26.7 and 27.8 bushels of coarse grains in the first three years of the second rotation.

The rotation summerfallow, wheat, hay, coarse grains has been tested in mixed farming areas across the prairies. The one year of summerfallow permits weed control and moisture conservation. Yields have been well sustained.

An extension of the crop rotation to five years in areas where moisture supplies are adequate will permit an expansion of the area devoted to feed production—either hay or coarse grains. In rotations under test a year of summerfallow is included where weeds are a problem. There are five five-year rotations being tested. The first is fallow, wheat, hay, wheat, coarse grains; the second is coarse grains for three years and hay for two years; the third is coarse grain for two years and hay for three years; the fourth is summerfallow, wheat, coarse grains, hay, hay, and the fifth is fallow, wheat, hay, coarse grains and alfalfa for five years.

COMPARISONS at Parkside, Sask., over a 12-year period on the last two rotations showed grain yields fairly constant in both, with hay yields somewhat higher in number four. Two years of breaking out of sod tend to make cultural operations a little more costly in number five. However, none of these five-year rotations are under test on Manitoba illustration stations, and results from tests conducted in Saskatchewan are still rather indefinite.

A six-year rotation was widely used in Manitoba, though it has now been displaced in large part by the eight-year sequence. The six-year rotation in most general use was fallow, grain, hay, pasture and break, grain, grain. This rotation is well adapted to variations in soil and climate. Hay is seeded with wheat on summerfallow, and this increases the probability of a satisfactory hay stand. A serious disadvantage is that in the fourth year it often was impossible to pull the cattle off the hay field and break it, because no other pasture was available. Added to this it sometimes was so dry and the field so hard that the sod could not be broken. It would lie in grass until the fall rains made it soft enough to break, with the result that very little crop would be harvested the next year.

Crop rotations in western Canada are in their infancy when compared with those in the old agricultural economies. However, more and more farmers are searching for a crop rotation that will permit them to build a really permanent type of agriculture. The search is not likely to be of short duration. Markets and limited moisture supplies are a major problem, and it is often felt that the present hay crops available are unsuitable for the semi-arid climate in which they must be raised. It is likely that crop rotations will develop hand in hand with farm technology and plant breeding.

Pyrenone

IT has been estimated that as much as ten per cent of the U.S. grain crop is ruined by weevils, beetles, and other pests after it is harvested. A U.S. company has now devised a one-shot chemical treatment for grain elevators or storage bins which gives protection for an entire season against insects. For wheat protection a comparatively new insecticide called Pyrenone is compounded with fine wheat dust, and for other grains it is mixed with a finely ground talc. If this material is applied to the grain as it goes into storage, the dust clings to the kernels and, in certain instances, has protected the grain for as long as 9½ months. The chemical itself is harmless to humans or animals.

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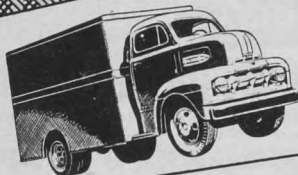
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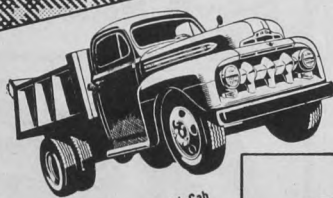
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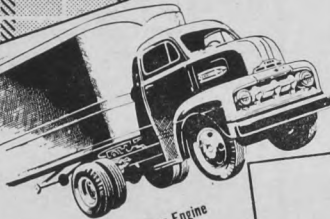
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Nail and Screw Storage

If bottles are not available for the storage of screw nails, small bolts, etc., put them in a drawer. The drawer can be made from a short piece of wide planking. Drill holes through it with an expansion bit—

DRILL 2½" HOLES IN SHORT LENGTH OF 10" OR 12" PLANK TO KEEP NAILS, ETC.



PIECE OF SHEET METAL FORMS BOTTOM

make them 2½ inches in diameter. Tack a light piece of sheet metal to the bottom of the plank and put a handle on one side. This makes a shallow drawer which can be put on runners the same as any other drawer. If work is to be done at some distance from the bench, the drawer can be taken out and carried under one arm.—M.E.P.

Hay Sling Convenience

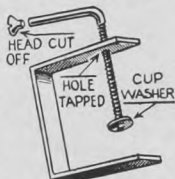
We drive our sling team at the opposite end of the barn from the rack which is being unloaded. On windy days and even sometimes on calm days it is difficult for the driver to hear the shouts of the man on the rack. I put a bell at the corner of the barn near the sling team and ran the control wire to within reach of the fork setter. By jerking the wire he can signal once to stop, twice to start and three times to back up.—J.L.F.

Polishing Compound

Many jobs of rust removal, polishing and fine grinding can best be done with homemade compound. Take the metal dust from under the grinding wheel and mix it with cup grease to form a paste. Apply it with a flannel cloth.—N.H.

Making Clamps

Small clamps can be mass produced by using short sections of channel iron. Drill and tap one side of the "U" to take a clamping bolt. The bolts should be of an appropriate size for the iron used but their treatment will be the same. Cut off the head and bend the bolt near the head end to form a handle for tightening. File the threaded end of the bolt to form a short tenon. Place a cup washer over the tenon andpeen it loosely to the bolt so it is free to turn. A number of these clamps should be made up in assorted sizes during spare hours around the shop.—J.R.E.



Egg Basket

I gather eggs several times each day and hate to be bothered carrying them to the house each time. Instead, I hang horse-type wire nose bags from the ceiling at convenient intervals in front of the row of nests. A few eggs are put in each basket at each gathering and there they cool quickly and keep clean. At the end of the day I gather the baskets and take them to the house.—J.S.

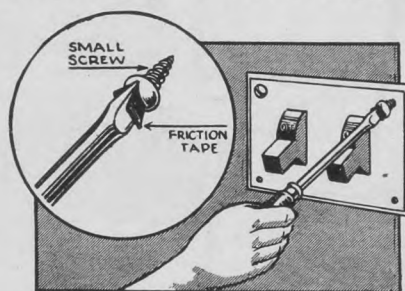
Cow Poke from Tire

This cow poke is easy to make and is very effective without hurting or bruising the animal. Cut an old car tire into two equal parts and cut a slit in the tread which is long enough to let the cow's head through. Place it on the cow's neck with the ends pointing forward. If it is too large for the animal, cut down the ends as required.—R.T.



Starting Small Screws

This method of inserting small screws is probably the handiest yet, since it requires no equipment except a bit of friction tape. Place the tape around the tip of the screw driver to



make a snug fit with the slot in the head of the screw—sufficiently tight to hold the screw until it is started in the hole.—W.F.S.

Digging Tool

When there isn't room to swing a pick in the bottom of a ditch or well, don't try to swing one. The same work can be done much more easily by

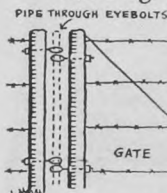


removing the handle from the pick and placing one end of the head in a short pipe. Jam the two together and use the tool like a crowbar. With this improved pick it is possible to work in almost any corner or confined space.—W.F.S.

Bulbs Rust in Sockets

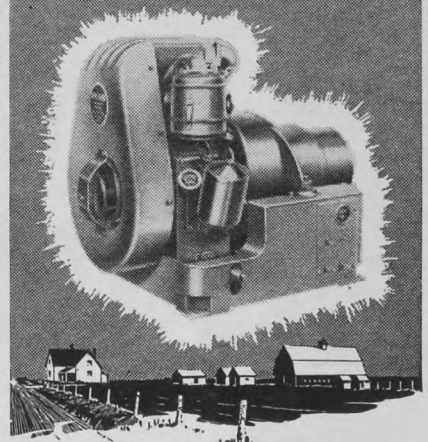
I have trouble in removing burned-out bulbs from their sockets in the barn and other outbuildings where there is a lot of moisture. By putting a thin coating of grease or oil around the base of the bulb when it is first installed, I find that the rusting is stopped and changes are easily made when necessary.—E.E.N.

Strong Gate Hinge



Strong hinges for a gate may be made on the farm if you have a set of heavy eye-bolts or a forge in which you can make them. I usually use ¾ or one-inch rod, heat it in the forge and bend it around 1¼ or 1½-inch pipe to form the eyes. The straight ends of the bolts are then cut long enough to go through the posts and are threaded. I found that these hinges are very strong and will prevent even heavy gates from sagging.—J.R.E.

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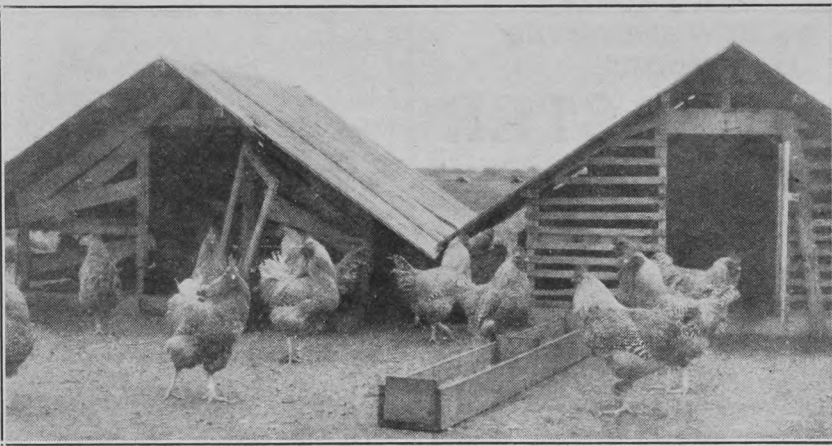
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POULTRY



[Guide Photo.]

A few of the good Barred Rock cockerels bred by R. C. McGregor, Carman, Man.

Forecast Production Decline

A WARNING has been issued by the Canadian Poultry Council to all poultrymen, that unless the present downward trend of production is halted within the next two months, a serious shortage of eggs next fall is almost a certainty. The Council is urging all provincial poultry industry committees to organize a concerted effort to expand 1951 flock replacements no less than 15 per cent over 1950 replacements.

The shortage is not likely to appear until late summer or early autumn. This is not to suggest that it is likely to be avoided. The decrease in laying flock population which followed loss of the British contract, together with rapidly mounting feed costs, combined to lower egg production in 1950. It is estimated by the Council that no more than 250,000 cases of eggs will be held in storage this spring for summer and fall consumption. This represents a decline of over 200,000 cases from last year. When it is considered that supply and demand were reasonably well in balance at that time, a shortage this year is probable.

The only way this shortage can be avoided is through an increase of 12 to 15 per cent in the number of birds brought into production next fall. Failing this supplies will be short and prices abnormally high.

Breeding Better Poultry

IN 1941 the White Leghorn flock at the Federal Experimental Station, Saanichton, B.C., showed considerable variation in production between birds, while the mortality rate seemed higher than it should have been. R. A. Sansbury, poultryman in charge of the flock, carefully examined hundreds of birds looking for a characteristic which could be used as a basis for culling poor layers and birds with poor livability.

He noticed that good layers had bright eyes while the eyes of poor layers were dull. He wondered if this characteristic could be used as a basis for classifying the good layers that were healthy on the one hand, and the poorer ones with a higher mortality rate on the other.

Using this characteristic he divided the farm flock into two grades according to eye condition. Grade one included those birds which had bright, clear, distinct and perfectly round pupils, with a solid red or light bay colored iris. The iris of the Grade two birds was generally lighter in color, often consisting of different shades, and in cases an indistinct grey.

He found that from 1942 to 1948 Grade one birds varied in annual mortality from 3.8 to 9.2 per cent, with an average of 6.4. The annual mortality in the Grade two birds varied from 17.9 to 27.7 per cent, with an average of 21.9. During the same years the Grade one birds had an average annual production of 222.4 eggs, and the Grade two birds an average of 176.6 eggs. In the first year of the work—1942—6.4 per cent of the birds qualified for Grade one; in 1948, 73.2 per cent qualified for this grade.

It would appear that the eye condition, with special reference to the pupil, can be recognized as a reliable characteristic, in selecting breeding stock. Breeding work is being carried on at Saanichton to determine if it is possible to produce a flock in which all the birds will have this desirable eye condition.

Vaccination in B.C.

THE biggest vaccination program in the history of Canada was recently begun in British Columbia. The program is being undertaken in an attempt to stamp out Newcastle Disease, the disease which cost poultry producers in the coastal province no less than five million dollars last year. The work is being done under the direction of Dr. John Hoey, Federal Health of Animals Branch. Thousands of birds are to be vaccinated with the new Doyle-Wright vaccine, recently developed in England. The job will be handled by a crew of 15 trained men.

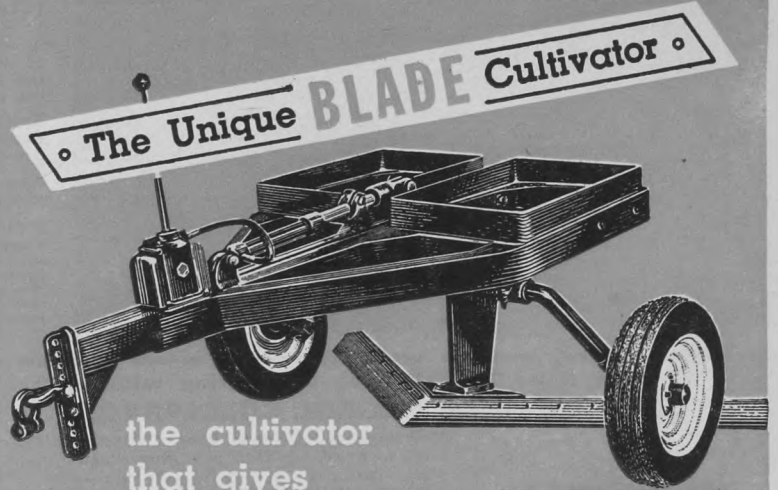
Birds as young as six weeks can be treated. On the other hand it has been found that older birds can be vaccinated without reducing production. Experiments with 600 birds have shown no ill effects.

Chemically Caponized Mink

THE United States Department of Agriculture recommends the dosing of broiler pullets with the synthetic hormone stilbestrol. The drug stops ovary growth, and so is responsible for a better quality meat bird. The chemical is placed under the skin of the neck. In order to prevent any possibility of bad effects on consumers the removal of the head and neck of the bird at the time of slaughter is recommended. The suggestion is made that the heads be fed to ranch mink.

The U.S.D.A. is now faced with a bill before Congress that could cost them damages of over \$55,000, payable to Henry Krueger, Elgin, Illinois. He charges that, following the suggestion of the Department of Agriculture he fed the heads of treated birds to his mink, and, as a result, many of his

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Designed to handle ALL SOIL CONDITIONS easily, Noble Cultivator attachments can be supplied for any soil condition. No cultivator without attachments can suit all conditions. Even where a plow will not penetrate, as for after-harvest work in certain dry baked soils, the Noble straight blade attachment will usually penetrate and work satisfactorily.

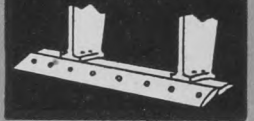
For weeding and second stroke summerfallow work the weeder blade is readily interchangeable, going on the same frog as the regular shovel blade. This weeder assures a better weed kill than the ordinary blade and should be used wherever the ground is sufficiently loose that it will penetrate. It clears through, penetrates and withstands rocks where the ordinary rod weeder will not.

The Model M shown above is very popular for use with Noble squadron hitches, from two to seven in a unit, for large power.

Write for information, stating your soil type and tractor power.

Fifteen years' experience under all field conditions is behind this cultivator. We welcome comparison in field tests with any other tillage equipment.

STRAIGHT BLADE ASSEMBLY



For better penetration in extremely hard ground. For extra deep work.

100° SHOVEL



Best for reasonably firm soils and most ordinary conditions.

75° SHOVEL



For sandy soils and very loose-textured black soils, particularly where grassy patches occur.

WEEDER BLADE



For all weeding and summerfallow work after the ground has first been loosened by the regular blade. Fits on the same frog as the regular blade.

NOBLE CULTIVATORS

Manufacturing Division of Noble Farms Limited
Phone 22 or 30 NOBLEFORD, Alberta, Canada



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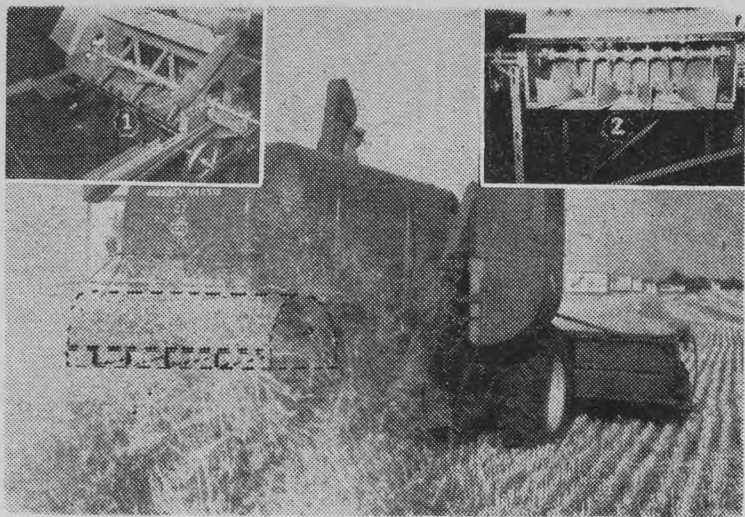
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WEED BURNER

- ★ BURNS WEEDS
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Use it year-round for killing insects and bacteria in poultry yards and hog pens, cleaning up weeds along fence rows, thawing out tractor crankcases—a hundred other uses. Burns kerosene, No. 1 range oil or tractor fuel. One hand operated, non-plug ring nozzle generator. See your dealer, or send us his name. Cedarberg Manufacturing Co., Inc., 559 South 4th St., Minneapolis 15, Minnesota.

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7', 9', 11' Deep Tillage Cultivator
Each spring tooth operates separately with double spring pressure on each tooth. Independent clutch operation for raising or lowering either side of cultivator from tractor seat provides easy turning. These units are the hardest to clog up that are made. Power lifts on both sides for positive lift action. Easy to operate.

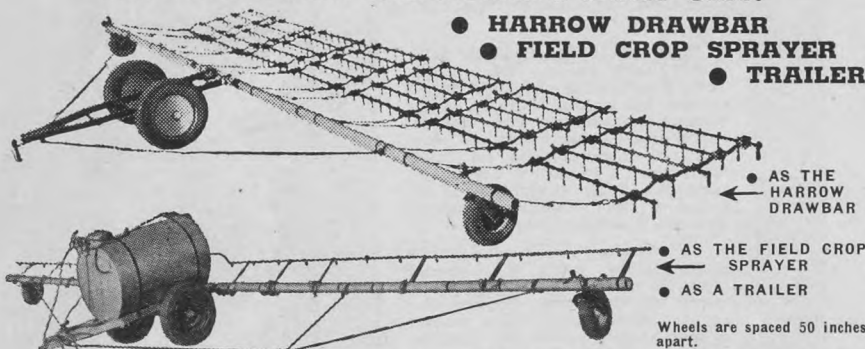
The improved Glencoe Deep Tillage Cultivators are used to break up hard pan, stop erosion, hold moisture, revitalize the soil, control weeds. Returns organic matter to lower soils and leaves stubble mulch on surface. The Glencoe Deep Tillage Cultivators actually cut your plowing costs in half and your yields increase.

PRICES	7 ft.	9 ft.
	\$338.00	\$404.00
	11 ft.	\$470.00

Complete with spear point shovels.
*Duckfoot shovels also available

You SAVE MONEY with INLAND'S 3-WAY UNIT!

- HARROW DRAWBAR
- FIELD CROP SPRAYER
- TRAILER

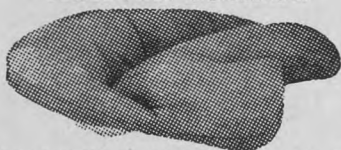


Converts quickly into 3 distinct uses. Sturdy. Durable. Economical. Lower first cost—lower operating cost. Copper booms. Headland spray and nozzle. Automotive wheels with Timken Tapered roller bearings. Boom extensions available to 70 ft. coverage.

Model D10—For 10 diamond or 7 flexible sections, gives 37-foot spray coverage. With P.T.O. drive	\$390.50
Model D12—For 12 diamond or 8 flexible sections, gives 43-foot spray coverage. With P.T.O. drive	\$404.50

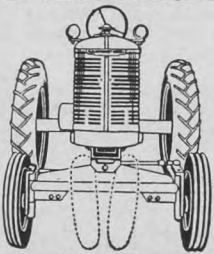
For Engine Drive add \$70.00.
Pneumatic or steel wheel rolling harrow drawbars also available.

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Pays for itself many times over in one season. Attached to your combine the Strawmaster chops straw, spreads it smoothly and evenly. Enables you to plow immediately after rain! No more straw burning or raking with the Strawmaster and it returns vital organic matter to the soil.

Tested and proven in heaviest straw conditions . . . Handles any straw capacity cylinder can handle . . . no overload on motor. Models for most makes of combines.

Saves time, fertilizer; improves soil.
Priced at

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1. CUTTING KNIVES. Spring controlled! Disappear when crowded.
2. NEW FIN DESIGN. Tapered design plus knives, make the 1951 model Strawmaster practically slug-proof! Reduces friction, reduces power requirements.

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YOUR FUEL DOWN!**

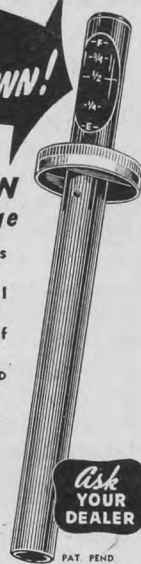
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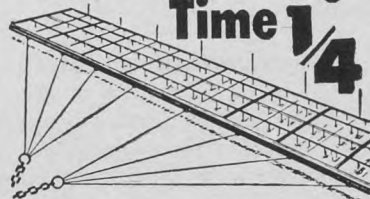
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Regular for 8 diamonds	\$41.00
Regular for 10 diamonds	\$48.50
Heavy Duty for 10 diamonds	\$61.00
Heavy Duty for 12 diamonds	\$70.75
Regular for 6 Flexibles (5 ft. cut)	\$42.50
Heavy Duty for 7 Flexibles (5 ft. cut)	\$76.75
Heavy Duty for 8 Flexibles (5 ft. cut)	\$83.25

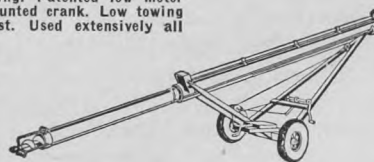
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Scoop-a-Second Grain Movers for fast, efficient grain moving. Patented low motor mounting. Specially selected materials. Easy raising—low mounted crank. Low towing feature for easy transport. Specially designed portable hoist. Used extensively all over the continent.

20 ft. model	24 ft. model
\$237.00	\$265.00
30 ft. model	\$340.00

Less engine, tires and tubes.



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young females have been barren. The mink of almost 30 other ranchers are reported to have been affected in the same way.

Evidence that the barrenness of the female mink is due to the stilbestrol is not conclusive, but it does throw enough doubt on the residual effect of the drug to justify the position of the Canadian government in refusing to allow its use in this country.

Some Things to Watch

THE poultryman who has great success with his chicks is generally the one who pays the greatest attention to their source. Unless the chicks are from healthy parent stock and are expertly incubated, a good environment later can be only partly effective in bringing satisfactory results.

A number of other steps can be taken to avoid pitfalls in chick rearing, advises W. F. Mountain, Head Poultryman, Federal Experimental Station, Harrow, Ontario. A reliable source of heat is important, as is stand-in equipment in case of power failure; spare bulbs and fuses should be kept on hand. The pen in which the chicks are housed should be separated from adult runs; drugs should be used carefully according to the manufacturer's instructions; and the space requirements of the birds should not be ignored.

As an aid to complete knowledge on these problems, frequent reference should be made to published material that is available on these subjects.

Turkey Egg Hatchability

SOME new ideas in turkey raising are being introduced by a Mr. Hallman at his turkey hatchery in Calgary, Alberta. Changes in the method of selection of breeding stock and in management have, in one year, succeeded in raising hatchability of eggs by nine per cent.

Originally selections were made on the basis of body type entirely. He now considers head and sex development as important as body type in making his selections. This departure is based in large part on experimental work conducted by Mr. McIlraith of San Francisco, California.

The original selection of male birds is made at 14 weeks of age. Desirable characteristics are considered to be good heads, and developed masculine wattles with brilliant coloring. The depth of body must not be more than half an inch more than the total length of the keel. Birds must be rapid feathering, show a pronounced lack of broken feathers, have parallel keel and back, and show evidence of smoothness of the keel bone, and a general lack of coarseness. Final selection is made when these birds reach market age.

The females are selected at five months. Rapid maturing birds are favored, and again strong emphasis is placed on the heads.

Breeding management has also been altered. The old system was to have 1,700 hens and 250 toms in one pen. Now they are divided into pens of 500 hens, and 50 toms are used, though only 25 are allowed in at a time. The two groups of toms are alternated daily, 25 being with the hens, and 25 away from the sight and sound of the pens. The reduction in fighting and the complete rest help to increase fertility.

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Simply and quickly installed. Swan's "No Slack" Trip Rope Stabilizer assures you a full untangled trip rope with just the right tension so that you trip implement at just the right spot. Farmers claim it's worth 3 times the price.



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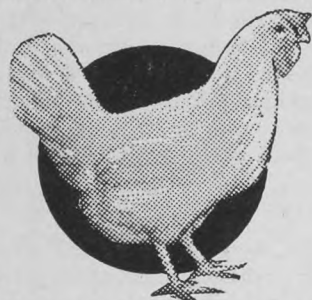
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WINNIPEG - - MAN.

If you want to cash in

on the high egg prices that we are almost sure to have next Summer and Fall, spend a cent or two more and purchase R.O.P. Sired Pullets. You have a far better chance of getting four to five dozen more eggs from R.O.P. Sired Pullets than from pullets sired by cockerels with no definite breeding back of them. With eggs at 50c a dozen this means \$2.00 to \$2.50 more profit. Send for 1951 Catalog and read all about Tweddle R.O.P. Sired Chicks. Also Turkey Poults, Older Pullets.

Tweddle Chick Hatcheries Limited
FERGUS, ONTARIO

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Hambley's R.O.P. Bred White Leghorns come from Government Approved R.O.P. Sires and are 100% R.O.P. Wing Banded.

Hambley R.O.P. Bred W. Leghorns are real egg machines. Where large white eggs are in demand they make an excellent showing. Rush your order now for early delivery. Pullets develop fast. Egg prices will be high next fall.

R.O.P. Sired	(MANITOBA)	R.O.P. Bred
100 50 25	(SASK.)	100 50 25
17.25 9.10 4.85	W. Leg.	18.75 9.90 5.20
35.00 18.00 9.25	W.L. Pull.	38.00 19.50 10.00
5.00 3.00 2.00	W.L. Ckls.	5.00 3.00 2.00
18.75 9.85 5.20	B. Rocks	20.25 10.60 5.55
34.00 17.50 9.00	B.R. Pull.	37.00 19.00 9.75
18.00 9.50 5.00	B.R. Ckls.	18.00 9.50 5.00
18.75 9.85 5.20	N. Hamp.	20.25 10.60 5.55
34.00 17.50 9.00	N.H. Pull.	37.00 19.00 9.75
18.00 9.50 5.00	N.H. Ckls.	18.00 9.50 5.00

APPROVED			R.O.P. Sired		
19.75	10.40	5.45	Sussex	21.25	11.00 5.75
34.00	17.50	9.00	L.S. Pull.	37.00	19.00 9.75
18.00	9.50	5.00	L.S. Ckls.	18.00	9.50 5.00
18.75	9.85	5.20	W. Rock.	19.75	10.25 5.40
20.00	10.50	5.50	B. Aust.	21.50	11.00 5.75
36.00	18.50	9.50	B. Minorca Pullets		

R.O.P. Sired	(ALBERTA)	R.O.P. Bred
18.00 9.50 4.75	W. Leg.	19.50 10.00 5.25
36.00 18.50 9.25	W.L. Pull.	39.00 20.00 10.25
5.00 3.00 2.00	W.L. Ckls.	5.00 3.00 2.00
20.00 10.50 5.25	B. Rocks	21.50 11.00 5.75
36.00 18.50 9.50	B.R. Pull.	39.00 19.75 10.00
18.00 9.50 5.00	B.R. Ckls.	18.00 9.50 5.00

APPROVED (ALBERTA)			R.O.P. SIRE			
20.00	10.50	5.25	Sussex	22.00	11.50	5.75
36.00	18.50	9.75	L.S. Pull.	39.00	20.00	10.25
18.00	9.50	5.00	L.S. Ckls.	18.00	9.50	5.00
18.00	9.50	4.75	N. Hamp.	19.00	10.00	5.00
33.00	17.00	9.00	N.H. Pull.	35.00	18.00	9.00
18.00	9.50	5.00	N.H. Ckls.	18.00	9.50	5.00
36.00	18.50	9.50	B. Minorca Pullets			
20.00	10.50	5.50	B. Aust.	21.50	11.00	5.75

APPROVED (Abbotsford, B.C.)				R.O.P. SIRE		
17.00	9.00	4.50	N. Hamp.	19.00	10.00	5.00
33.00	17.00	8.50	N.H. Pull.	35.00	18.00	9.00
9.00	5.00	2.50	N.H. Ckls.	11.00	6.00	3.00
17.00	9.00	4.50	W. Leg.	18.00	9.50	4.75
34.00	17.50	8.75	W.L. Pull.	36.00	18.50	9.25
4.00	2.50	1.25	W.L. Ckls.	4.00	2.50	1.25

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100 50 25	
Broad B. Bronze	90.00 46.00 23.50 9.50
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100% Live Arr. Gtd. Pullets 96% Acc.	

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STEWART ELECTRIC HATCHERIES

602C 12th Avenue West, Calgary, Alberta

He Breeds Good Birds

R. C. McGregor, Carman, Manitoba, breeds fast-feathering Barred Rocks of a very high quality

It was 30 years ago that young Bob McGregor succeeded in getting his Dad's poultry flock approved. During the next seven years his interest in the flock continued, though he was away from the place so much that he could not take too active a part. During those years he gained a Bachelor of Arts degree at the University of Manitoba in political economy and languages, and started into a career in teaching. He found, however, that he was more interested in raising chickens than in teaching children, and in 1928 he bought nine acres of land on the outskirts of the town of Carman, Manitoba, and started a poultry breeding plant. Soon after, he bought an additional 100 acres, and prepared to expand his operations.

He now has a very large plant. He typically runs between 2,500 and 3,000 birds during the winter, raises between 5,000 and 6,000 birds a year for replacements and sale, and last year hatched and sold no less than 88,861 chicks. All of these were from eggs that he had produced.

He has produced and now raises a

decided against making any change.

In the 23 years that he has been in business McGregor has built up a body of steady customers that satisfactorily stabilize his sales. However, last year he increased his chick sales 10,000 birds over 1949. The majority of his sales are in the province of Manitoba, though he ships quite a few cockerels to the other provinces.

R.O.P. breeding is always a technical business. If a breeder searches for special characteristics as McGregor has done, it becomes very much more technical. Added to this he attempts to do considerably better than the minimum requirements set up by the government. Some idea of the complicated nature of the undertaking can be gained from some of Mr. McGregor's own comments:

"EACH year I enter approximately 1,000 pullets under R.O.P. trap-nest test. About 95 per cent of these are entered in family groups. A close study is made of the results, the best families are selected, and these, together with the best proven breeders



R. C. McGregor and an assistant, Miss Runa Irwin, trap nesting birds.

strain of fast-feathering birds. He had heard of this characteristic in Barred Rocks and was extremely interested in the possibility of producing it in his own flock. In 1943 the characteristic showed up in one male and two females in his flock. McGregor segregated these birds and followed a careful breeding program, with the result that at the present time his entire flock, with the exception of two experimental pens, is fast-feathering. It should be noted that unless correct breeding procedures are used the fast-feathering characteristic can be lost.

The advantage claimed for fast-feathering birds is that the chicks feather rapidly, and so require less heat for brooding, and in normal weather, for a shorter period of time. As a rule, chicks grow more rapidly than do the slow-feathering strains. The cockerels show very few pin feathers when dressed.

McGregor has had very little trouble with disease in his flock. This may be due partly to the fact that he rarely brings adult birds onto the premises from outside. If he does, he gets them from a flock which he knows is free from disease.

He has always raised Barred Rocks. He has tried birds of other breeds from time to time, but was never satisfied that he was justified in making any change. Last year he brought in New Hampshires and Light Sussex to check their rate of growth against his own Barred Rocks, but once more

of previous years, are segregated. From these superior breeding families the best individuals are selected and put into individual pedigree matings—one male to 15 females. Each hen's eggs are separately hatched by means of pedigree baskets, and chicks identified by numbered wing bands. In this way an accurate record of both father and mother is kept.

"I make up 15 of these special individual pedigree matings, and so have a possible 225 different families. In R.O.P. a family is defined as five or more full sisters. This is far too many families to test. Families that give poor fertility, hatchability, or livability of chicks are discarded, but by the progress of breeding methods the number of poor families is not large. The requirement of a family is five sisters, but by raising my own standard above the minimum to eight sisters I eliminate more families, and bring the number down to about 125. The full sister groups of these families are again entered in R.O.P. test."

This could be enough to keep a man occupied, but McGregor is now interested in developing a breed of heavy birds that will lay white eggs. He has not gone far in the project as yet, but it is a fond dream. "It is more or less of a study in genetics to see what I can do" says Bob McGregor. "I like tinkering around. The first generation of 'white-egg hens' laid the loveliest bunch of brown eggs you ever saw, but that is part of the game!"—R.O.H.

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In lots of 100	50	50
W. Leg.	17.25 9.15 35.00 18.00	
B. Rocks	18.75 9.90 34.00 17.50	

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L. Sussex	19.75 10.40 34.00 17.50
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When the White Fox Migrates

White foxes and polar bears put on an interesting demonstration of co-operation when lack of food drives the foxes out of their customary range

by GILL SHARK

HOW does northern wildlife survive when its food supply dwindles? The answer is that, normally, it doesn't. Records kept of the lynx catch in Canada show that when food is abundant, as in 1885 (a year rabbits were at their peak) some 65,000 lynx pelts were handled by one Canadian fur company, while by 1890, when the rabbit cycle crashed, the lynx catch fell to less than 4,000 skins. In 1905, again, the same company's records show about 55,000 lynx caught; while for 1909, the figure slumped to less than 3,000. Thus it has been for the more than 200 years for which accurate figures have been kept in Canada. In times of "crash," snowy owls migrate to the south where food is plentiful. Wildlife that cannot migrate usually starves.

However, in an extraordinary drama of northern life, it appears that one precious furbearer, the white fox of the arctic, has discovered how to beat famine, at least during the lean winter months. These small animals live chiefly on mice and lemmings which, normally, are quite plentiful in the Arctic.

PERIODICALLY, though of shorter duration than the familiar "ten-year cycle" of rabbits, the crash hits the foxes' main source of food. "Mice, voles, lemmings and shrews apparently have a four-year cycle of their own," states Dr. William Rowan, professor of zoology at the University of Alberta, and one of the world's leading experts on the mysterious and baffling wildlife cycles. As with the rabbits, the small rodents rise to incredible peaks, then as suddenly disappear.

The "crash" of rabbits spells lean days for the trappers who go after the woods-loving lynx. Likewise, disappearance of the mice and lemmings means hardship for the Eskimos and other far northern residents, who depend chiefly on foxes for cash. Small wonder Dr. Rowan says that if the mystery of wildlife cycles could be solved and controlled, "the fur trade, one of Canada's primary industries, would automatically become stabilized."

Last winter, southward migration of the snowy owls was evidence that the four-year cycle was nearing its peak. This year, the scarcity of mice and lemmings is acute. Strangely, though, the clever foxes will not suffer too seriously. While lynx may be found wandering along empty rabbit runs, vainly searching for food, the wily foxes leave the tundra. In great numbers this year, they are migrating seaward to the frozen Arctic Ocean. They are in search of polar bears!

To those who know Nanook, the polar bear, the explanation is simple. Though polar bears "disappear" for uncertain lengths of time, only to reappear just as unexpectedly, they do not hibernate during the winter months. At all times of the year, Nanook lives on the hair-coated northern seal—fishing them underwater in summer and through the ice in winter. White foxes seem to know this and in midwinter, even when tundra food is plentiful, many of them make sporadic trips to the sea ice, to scrounge off the big bear's labors.

In winter, the bear's method of fishing is very similar to that of the natives. He ambles over the ocean ice till he finds a cluster of aglus—seals' breathing holes. Unerringly he sniffs out the hole most frequently used by a seal, scrapes away most of the frozen snow and ice till only a shell remains, then squats beside it, great right paw upraised, motionless as a snowman. When the ph-f-f-t! of escaping breath tells him the seal is coming up for air, the sledgehammer paw descends, smashing through ice and the seal's skull as if both were taut cigarette papers. Occasionally the Eskimo with his harpoon may miss—the polar bear never fails. So engrossed is the bear in his work that, often, hunters stalk him unnoticed, waiting a few feet off until he gets his prize, after which the hunter takes both seal and bear.

FORTUNATELY for the foxes, polar bears are not fond of meat (unless it is very much overripe) and are interested only in the seal's blubber. Hence on the ocean ice, it is common to see a polar bear surrounded by a retinue of white foxes, waiting patiently for him to nab his favorite prey. While the bear is motionless, they sit still on the snow. When the seal is dragged out, they run around in circles, licking their small chops, eager to feast. The bear is always irritated by their presence, but only occasionally is he quick enough to swipe one with a mighty forepaw. At times like this, it makes no difference to the ever-increasing numbers of foxes taking to the ocean ice—they must stay with him to survive.

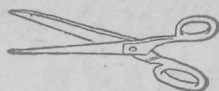
Sometimes, in the curious, continual hunting drama that is the way of all life in the northland, they repay the bear. Their keen black eyes spot approaching hunters. Shifting uneasily about the ice, they attract the bear's angry notice, who then perceives the one enemy he must fear: man. Off he ambles in annoyance toward the hills of snow, dark with their own shadows—his faithful and hungry followers a short but respectful distance behind him.



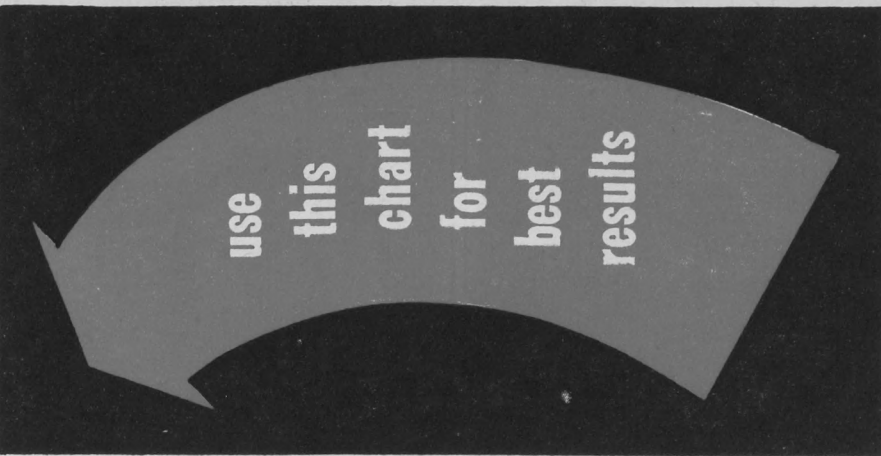
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WHAT to spray	WHAT to use	HOW MUCH to apply	WHEN to use	WHAT it controls
Wheat, Oats, Barley, Rye	ESTERON 44	1/2 to 3/4 pint in 5 to 10 gal. water per acre.	When plants have reached 3 leaf stage, and grain at full tiller stage	Mustard, Stinkweed, Canada Thistle, Russian Thistle, Perennial Sow Thistle, Pigweed.
	2,4-DOW WEED KILLER FORMULA 40	1/2 to 3/4 pint in 5 to 10 gal. water per acre.		Mustard, Stinkweed, Canada Thistle, Russian Thistle, Pigweed.
	ESTERON DUST #5	5 to 8 lb. per acre.		Mustard, Stinkweed.
Corn and Flax	ESTERON 44	1/2 pint in 5 to 10 gal. water per acre.	Corn when up to 10" and flax when at 4 leaf stage.	Mustard, Stinkweed, Canada Thistle, etc.
	2,4-DOW WEED KILLER FORMULA 40	1/2 to 3/4 pint in 5 to 10 gal. water per acre.		Mustard, Stinkweed, Canada Thistle, etc.
Grain interplanted with alfalfa, sweet clover	DOW SELECTIVE WEED KILLER	2 1/2 to 3 quarts in 50 to 75 gal. water.	When crop 4" to 6" tall.	Mustard, Chickweed, Shepherd's Purse, Ragweed, Stinkweed, Pigweed, etc.
	DOW SELECTIVE WEED KILLER	2 1/2 to 3 quarts in 50 to 75 gal. water.	When crop is 4" to 8" tall.	
Peas			Best — immediately following plowing and cultivation.	Quack grass.
Grass Control	SODIUM TCA 90%	50 to 100 lb. per acre.	Pre-emergence soon after planting.	Certain spring annual grasses such as green and yellow fox-tail.
Sugar Beets	SODIUM TCA 90%	8-10 lb. per acre.		



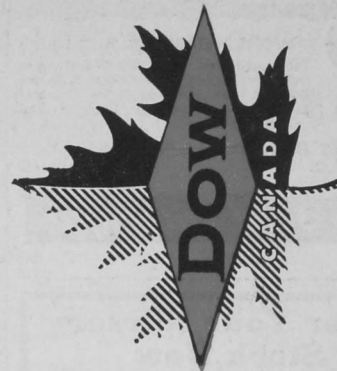
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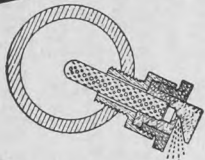
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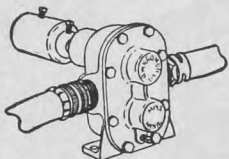
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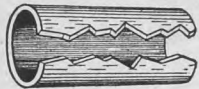


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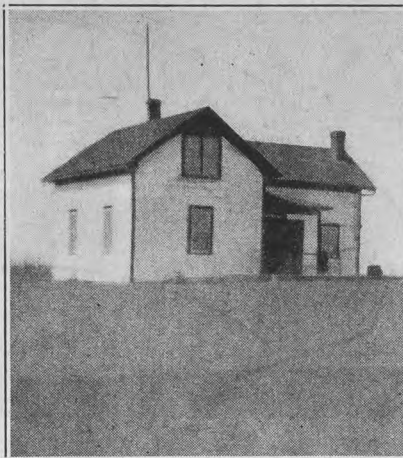
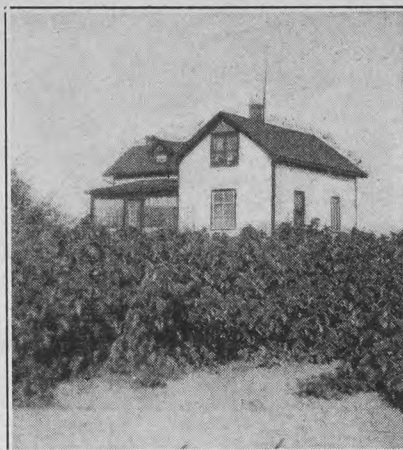
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HORTICULTURE



Farm house of John Barnes, Bindloss, Alta., before (1932) and after (1934) soil drifting. Note two-foot depth of drifted soil in 1934 and complete absence of garden.

Twenty Years of Orchard Practice

Ralph Thornton, Sedalia, Alta., has seven acres of orchard

by MRS. M. O. MYERS

"THIS is no apricot country," declared Ralph Thornton, of Sedalia, Alberta, as I talked to him in his home.

Mr. Thornton owns and operates a seven-and-one-half-acre orchard of stone and small fruits; and a tour through it well convinces one that it is a wonderful hobby, packed with interest and the fruits of one's labors. Surrounding the orchard are towering willow and poplars for shelter. As well as fruit trees and shelter belts, he also has some very nice evergreens, including blue spruce. Caragana grow in profusion, but are proving a nuisance, so he is destroying a lot of them.

Mr. Thornton started this project, or, as he laughingly asserted, "I guess you'd call it a hobby," in 1925 with just a few trees, but the main part in 1927. Most of the trees were from Stevenson in Manitoba, and a lot were bearing in 1930. A great number of his trees are sent to him from the Experimental Station at Morden, for experimenting. These he always plants in pairs, as they send two of a kind. Growing side by side, they are watched for their productivity and suitability to the climate. His last expanding venture was the little orchard started about ten years ago, all of which has been bearing for some time.

WHEN asked which of his fruit trees were best in his estimation, Mr. Thornton gave Heyer No. 12 as his best crab apple (usually rated as a standard apple—Ed.) He has approximately 25, all good. Blushed Calville really tops the standard apples in his orchard. It's a lovely eating apple. Patten Greening, the best cooking apple, one year measured four to the foot.

He has about 25 kinds of plums. His favorite is the Underwood, which produces a sweet juicy fruit, almost as large as a hen's egg. The Mammoth, a strain of wild plum, does well, also hybrids like Sapa and Opata are satisfactory.

Sandcherries do very well but there is no demand for them, so he only keeps a few for cross pollination. There are even pears in this orchard, four kinds, Tait Dropmore, Bantam, a wild one and another of which he could not recall the name at the

moment. Winter killing was most severe in the pear trees a year ago.

His apricots were extensively damaged too. They have not proved at all satisfactory or reliable, hence his remark about "no apricot country."

Coronation cherries prove good, but Nanking fruits too scantily and the flavor is poor. Hybrid Tom Thumb does well and is nice. "It's O.K.," said Mr. Thornton. He has raised grapes but they cannot be relied upon to ripen outdoors, and with all the other fruit in abundance, it's no wonder he deems them too much work. Red, white, and black currants, and gooseberries are very prolific there. He has grown strawberries, and at one time sold plants. Mr. Thornton shook his head as he recalled the days when they sold plants at sixty cents per hundred, prepaid, with a good many backaches for good measure. As the orchard took so much time and work, he gave up strawberries, but will plant some for their own use this year.

SO far he has had no tree pests. In the 20 years of fruit harvesting there has been only one year of failure, and even then they had some for their own use. Frost was the damaging factor that time.

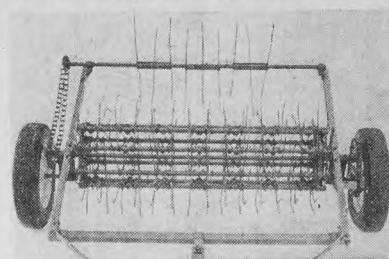
He first irrigated in 1938. At present he has three large dams to catch the spring run-off. These are fitted with pipes to carry the water to a point where it can be diverted to various parts of the garden and orchard, by flooding.

In 1949 he started using weed spray on a small scale and the results warranted using it on a much larger scale this year. Very little hand hoeing is necessary now.

Mr. Thornton also specializes in Shorthorn cattle. In 1925 he purchased his first purebred Shorthorn bull to use with the cattle he had. In the fall of 1933 he purchased a heifer, and again in the fall of '34 and fall of '35 he did the same. At present he has a herd of sixty purebred Shorthorns, counting calves. At the head of the herd is a grandson of Balmuchy Jasper, imported from Scotland, by Gallinger.

Pasture is the main headache now, and feed proves quite a problem at times. He has one never-failing 50 acres which he irrigates from a large

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1951 PICTURE GOOD

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The Multiflora Rose

RECENT articles in American and Eastern publications have been laudatory with respect to the multiflora rose, and have given rise to many queries from prairie farmers. A recent Ottawa bulletin entitled "Outdoor Roses in Canada," prepared by the Division of Horticulture, Dominion Experimental Farm Service, describes this rose as not being sufficiently hardy for any but the milder parts of Canada. It is not recommended for the prairie provinces or western Ontario.

D. R. Robinson, Extension Specialist in Horticulture at the University of Saskatchewan, calls our attention to the fact that the multiflora rose is not recommended in any of the several prairie bulletins and plant lists which he has checked. He writes:

"In bulletin 127 recently published by the Extension Department, University of Saskatchewan, 16 varieties or species of roses are listed. Twelve of these are double or semi-double. The colors of these roses range from white through pink and red to yellow. Any of these roses would be more satisfactory under our conditions than the multiflora rose. More frequent reference should be made to prairie plant lists before orders are placed with nurseries, for any kind of horticultural material."

Gardens from Dugouts

HAVE you thought of using the water from your dugout to irrigate the farm garden? It will take care of an acre of high-yielding garden, according to the Experimental Station at Swift Current and the whole family will relish the abundance of fresh, green vegetables.

If you are not sure how to go about it, or have never tried irrigation, a new bulletin "Irrigating the Prairie Home Garden," by H. C. Korven of the Swift Current Station, is now available.

Garden Perennials

A FAIRLY wide range of hardy perennials for the flower garden can be grown in most parts of the prairie provinces. From the experimental station at Beaverlodge, Alberta, we are told that over 75 varieties are grown on the station. Among many others recommended are the delphinium, or perennial larkspur, grown in single clumps, or grouped in the background, the Morden pink lythrum, and Dropmore purple lythrum, lavender or Siberian rose mallow, which is tall-growing with attractive pink flowers, but should be kept in the background owing to its tendency to become ragged. Another is the very hardy and easily propagated tiger lily; and of course many other lilies are procurable in named varieties. There are also the ox-eye daisy, oriental poppy, the shasta daisy, and the smaller edging or border plants such as Iceland poppy, yellow-tuft alyssum, Carpathian bell flower, edging candy-tuft, maiden pink, and others.

Station authorities say that most recommended perennials will survive northern winters without protection, if planted in a location where snowfall is retained. Some perennials, including bleeding heart, some named varieties of pinks and certain varieties of phlox and carnation should be mulched with clean straw over winter, after the

ground has begun to freeze, if a fairly good snow cover is not certain.

The iris is one of the first perennials to bloom in the spring, but relatively few varieties are sufficiently hardy at Beaverlodge. It can be obtained in a wide range of varieties. Peonies follow and these also come in many colors, shapes and sizes. Day lilies, according to P. D. McCalla, Supervisor of Horticulture, Alberta Department of Agriculture, will provide a wealth of bloom over a long period, from a succession of well-chosen varieties.

Is Old Vegetable Seed Safe?

PERHAPS you have some vegetable seed from previous years and are wondering if it is safe to plant it. The best way to find out is to try a germination test before planting, but for general information here is the approximate length of time seeds of different vegetables may be expected to live if they have been properly cared for: One year, parsnip; two years—onion and sweet corn; three years—asparagus, bean, carrot and pea; four years—beet, pepper, pumpkin and tomato; five years—cabbage, celery, cucumber, lettuce, melon, radish, spinach, squash and turnip.

The simplest germination test is made by taking two pieces of moist blotting paper, putting a known number of seeds between them, and keeping them in a warm room, between two plates, the top one inverted. Count the number of strong, vigorous sprouts which result, and sow some extra seed to make up for seed which does not germinate well. Generally, however, if new, fresh seed is readily obtainable, it is better to use it.

Know Your Shrubs

by DR. R. J. HILTON,
University of Alberta

The Altai Rose

THE botanist takes a course in geography as well as in plant characters when he studies plant botanical names. The Altai rose, for example, bears the imposing name of *Rosa spinosissima*, variety *Altaica*, meaning a variety of the very spiny Scotch rose, native to the Altai Mountains of Siberia. We include the Altai among our most hardy outdoor shrub roses, along with *Rosa rugosa* and its hybrids; *R. rubrifolia*; *R. xanthina*; Harison's Yellow and Persian Yellow, as well as some of the newer hybrids and selections involving one or more of our attractive native prairie roses. The Altai is selected for special mention because of its hardiness, dependability, profuse blossoming, and its very showy, 2½-inch, creamy-white single blossoms, each with its golden iris of stamens and stigmas.

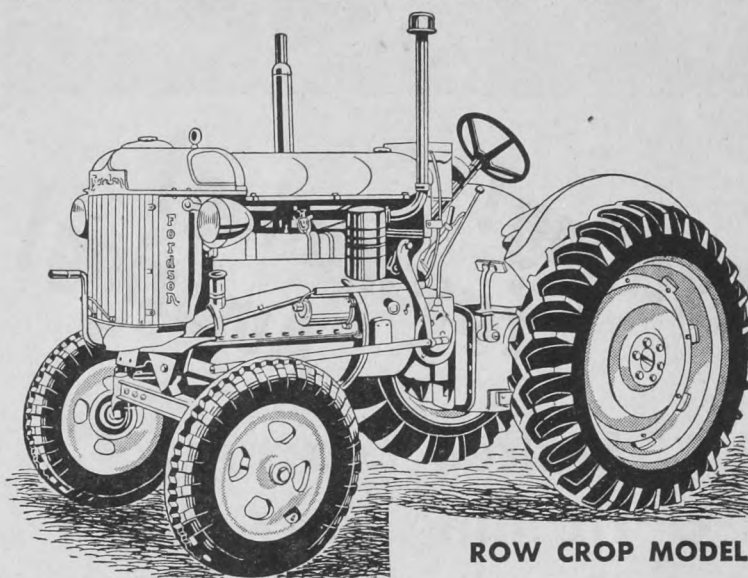
This rather erect shrub with the long official name makes a very useful tall foundation plant or group, and also lends itself well to specimen use on the lawn or incorporated in casual background shrub groups. Like all roses, it prefers plenty of sun, but is moderately tolerant of drought and poorer soils. Blossoming usually is from mid-June to early July, but its period of garden beauty is extended by the often brilliant autumn foliage coloring and its numerous and large, shiny black fruits or "hips." The species does sucker, but not enough to make it a nuisance in the lawn or garden.

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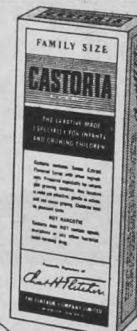
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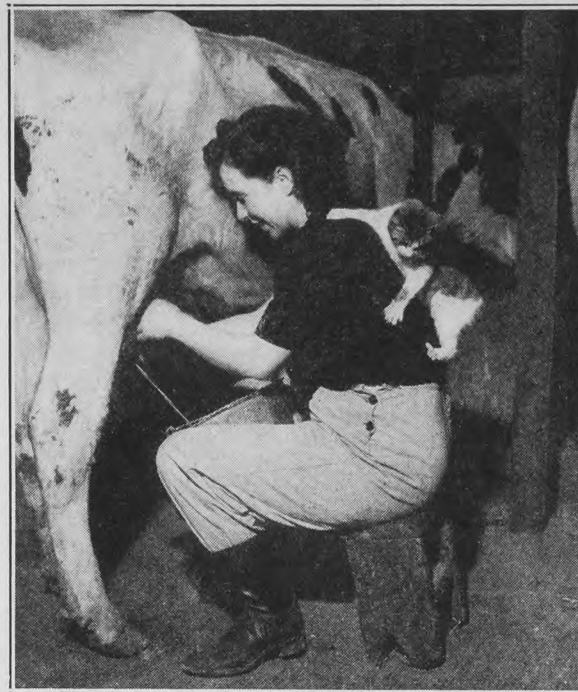
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FARM YOUNG PEOPLE

*The cat plays, but the
chores go steadily on.*



Little Royal Show

BOB OBERG, Hendon, Sask., won the grand championship award given for showmanship at the Little Royal recently staged by the School of Agriculture, University of Saskatchewan. He won first place in both the dairy and beef cattle competitions, second in the horse competition, and third in both the sheep and swine competition. Reserve championship went to Harry Elder, Fillmore, Sask., and third place to Bill Horsburgh, Tompkins, Sask.

Speaking before the students, W. B. Baker, director of the school, said that this year's course was designed to lay particular emphasis on community leadership, and through their activities in organizing and putting on the Little Royal the students indicated that the lesson had been learned.

O. A. Cooke, northwest agricultural representative supervisor, felt that leadership such as that demonstrated by the students was badly needed in rural areas, and he hoped that they would make use of their experiences after they went home. He felt that in almost every locality a few men were carrying almost the entire load of local leadership, on municipal councils and agricultural committees. He urged the students to accept some of these responsibilities.

He also felt that there was a need for the application of more scientific methods on the farms of Saskatchewan, and he urged the students to remember what they had learned in the classroom, and to apply it on the farms. Many of the great strides made by agricultural science in the past 50 years have not reached the farms. Mr. Cooke felt that these students could help to carry back a message that could lead to better farming.

May Change to 4-H Clubs

A RESOLUTION was passed at the annual meeting of the Canadian Council on Boys' and Girls' Club Work, recently held in Winnipeg, which recommended that the name of the Council should be changed to the Canadian Council on 4-H Clubs. This recommendation will now go before the Department of State in Ottawa, and, subject to their approval, the name of the Council will be changed.

If this approval is given—and it is not certain that it will be—it would be

likely that provinces would alter the name of local clubs from "Boys' and Girls' Clubs" to "4-H Clubs." This would be in line with the name applied to clubs in the United States and a number of other countries of the world, and the forestry clubs in the province of Quebec.

It was pointed out at the annual meeting that enrolment in club work in 1950 attained the highest mark on record in Canada. There were 54,081 members enrolled in no less than 4,010 clubs—an increase in membership of 7.6 per cent compared with 1949.

Perhaps more important than the increase in membership is the development in club programs and in local, district and provincial activities. These included such things as tours, field days, achievement days, club shows, camps, rallies, junior departments at exhibitions, and other events in which club members took part.

During the year past, hundreds of voluntary local club leaders co-operated with the extension services in giving service to club work. Recognition and encouragement has been given to these local leaders through the arrangement of leaders' conferences, the provision of literature and the awarding of Leadership Award Certificates for five or more years of service. The extreme importance of efficient local leadership in achieving the best results from club work and in the further development and expansion of the whole club program is generally recognized.

Considering all aspects of the work the Canadian Council was satisfied that boys' and girls' clubs in Canada had a very good year.

Junior Farmers' Club

A YOUNG farmers' farm management club has recently been organized at Richmond, British Columbia. The club is to be jointly directed by S. E. Woodward, Dominion Economics Division, and W. Anderson, Professor of Economics, Faculty of Agriculture, University of British Columbia.

The project is designed to improve management practices on the farms on which club members live. It will involve a study of the plan of the farmstead, buildings, fields, the keeping of farm records, and an attempt to simplify farm work with the object of increasing farm efficiency.

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OF ALL CARS, here's your choice for 1951 — the new Chevrolet — Canada's largest and finest low-priced car. It brings you *all* the things you want — and that includes the first fully-automatic transmission in the low-price field, POWERGLIDE*! In your POWERGLIDE-equipped Chevrolet with its new 105 h.p. engine, you step on the gas to go, step on the brake to stop, *and that's all* in normal driving! There's no clutch pedal, no shift!

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for Norman Gateman, Mossleigh, Alberta

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D2 No. 2 has already taken him through some mighty wet springs... and rush seasons... handling the heavy-duty work with a smile! Past performance of his "Caterpillar" D2 Tractors has shown Mr. Gateman that he has the power he can depend on to see him through these uncertain times.

It's not by chance that Mr. Gateman's first "Caterpillar" D2 gave him top grade service, nor that he's mighty pleased with his second one. "Caterpillar" Diesel Tractors have a reputation for outstanding performance with a minimum of care.

For help with your equipment problems, see your "Caterpillar" Dealer. He will help you anticipate your power needs for the seasons ahead... show you how to get the most from your farm tractor... how to keep it on the job.



Norman Gateman, Mossleigh, Alberta wheat rancher, pulling two tiller combine and packers with his "Caterpillar" D2. He averages about 5 acres drilled per hour on 1 1/4 Imperial gallons of low-cost Diesel fuel.



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DIESEL ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

Science

Continued from page 11

land. These maps are in constant use by loan companies, bankers, government agencies and many others. Most of these men can learn as much, or more, about the nature of the soil on your farm by studying the soil map as they formerly could by making a personal inspection. And the inspection might cost from ten to a hundred or more dollars. The use of these maps has reduced their cost of operating, and has saved a lot of money.

SOONER or later grasshoppers seem to become a plague in nearly all large grain-producing areas. Since early biblical days farmers have seen crop after crop devoured by locusts. Western Canada has not escaped. But agricultural scientists have worked on this problem, too, and with good results. No one would claim that the grasshopper problem has been solved, but great advances have been made in the last 20 years, and particularly in the last decade. At first, the only practical control measure that could be recommended was one based upon cultural practices. This helped and is still recommended, but it is now only one of three types of control practices at the farmer's disposal. It was soon supplemented by the use of poisoned bait. New, better and cheaper poisons were found. New, better and cheaper carriers of the poison were discovered. Finally the invention of cheap and mechanical bait spreaders made the baiting method of control practical and effective. The third method of control, and the last one to be brought into practical use, is that of spraying. By combining all three methods in an intensive grasshopper control program, a saving of \$50,000,000 worth of crop is claimed for Saskatchewan alone in 1950.

Weeds probably rob the farmers of Canada of ten to 20 per cent of their grain crops. They sometimes cause other losses, such as producing objectionable flavors in milk and meat, causing snow to pile up on highways, and so forth. Cultivation is probably still the best method of controlling weeds. Its chief disadvantage is that it can only be practiced extensively in the absence of a growing crop. Chemical control, while it has its limitations, is a new and powerful weapon in the battle against weeds.

Some weeds do not yield to chemicals of the plant hormone group, but these chemicals, which are relatively cheap and easy to apply, have proved their value in practical farming. The use of chemicals, in combination with good cultural practices, has enabled the farmer to carry on the fight against weeds from spring until freeze-up, whether a crop is growing on the land or not. The popularity of chemicals for controlling weeds is indicated by the fact that many millions of acres of crop were sprayed or dusted last summer in western Canada. Ten million acres is probably a reasonable guess. This new development has resulted from research work which, even now, is only about ten years old. Application of this research, to the extent indicated, has come about in five years. Specialists in this subject are reasonably confident that other new and

important discoveries will be made in this field.

The problem of the early settlers was frost. Later, plant diseases, particularly stem rust and smut, became relatively more important. As these were brought under control, grasshoppers, sawfly and weeds took over as the leading enemies of the farmer. It would be untrue to say that the problems posed by all of these have been solved; but it is true that a large measure of control has been achieved and that this has been accomplished through research.

THUS far we have dealt only with what the agricultural scientists have done for the grain farmer. Have they done anything for the many problems of the livestock producer? The answer must be an emphatic "Yes!" To enter into all of them in detail would take too much space, so they will be grouped, not necessarily in order of importance.

Let us consider something of what has happened in the matter of disease control in farm animals. It was learned long ago that some diseases were infectious, and that some were due to nutritional deficiencies. The infectious diseases have been attacked on two main fronts, exclusion and protection. The exclusion idea finds expression in such practices as the quarantine of imported animals and the restriction of the movement of animals within certain areas. Most of us do not appreciate what the quarantine system has done in keeping all Canada free of "foot and mouth disease" to name only one. The same principle has been used to control the traffic in animals in the "Tuberculosis-Free" areas of the country. Quarantine, in all its aspects, may be considered by some to be more of an administrative problem than a scientific one, and that is partly true. Yet the administrators must lean heavily upon the technical knowledge and judgment of the scientist, especially the veterinarian, to make the system work. To a lesser degree the same principle is used in the poultry industry in preventing the spread of pullorum through the hatcheries. Other examples could be cited, but these will serve to illustrate what has been done to eliminate disease by use of the exclusion principle.

The protection principle, the control of infectious diseases by causing the animal to acquire resistance to disease by man-made means, has been used extensively. It is entirely a development of science in the last 70 years, and some of its spectacular achievements have come in the last 20 years. It is by this means that equine encephalomyelitis has been brought under control. The story is the same for blackleg in cattle, and we are well along the way to control Bang's disease (contagious abortion or Brucellosis) in cattle by similar means. The combined attack of practicing veterinarians, research veterinarians, bacteriologists and immunologists is paying off handsomely. And only a few of the results have been mentioned.

With respect to diseases which are caused by nutritional deficiencies, the agricultural scientists have had a field

day! There isn't space to list all of the diseases of all types of livestock which are attributed to nutritional deficiencies. Lack of iron, lack of calcium, lack of boron, too much silica, lack of iodine, lack of cobalt, lack of vitamins A to P, lack of certain essential amino acids, these are some of the problems which are being studied by the animal scientists. Gradually, little by little, these nutritional defects are being related specifically to the difficulties experienced by the stock grower. They are being related to such things as anemia in suckling pigs, milk fever in dairy cows, unthriftiness in all types of animals and sometimes to symptoms of poisoning, to infertility, poor egg production, rickets, and so on. All research along these lines has taken place in this century, much of it within the last 20 years, and a considerable amount of it within the last ten years. As an aside, it is interesting to note that the science of human nutrition has benefitted greatly from these discoveries. Apart from certain "observations," the entire credit for the discovery of vitamins must go to men who were studying animal nutrition.

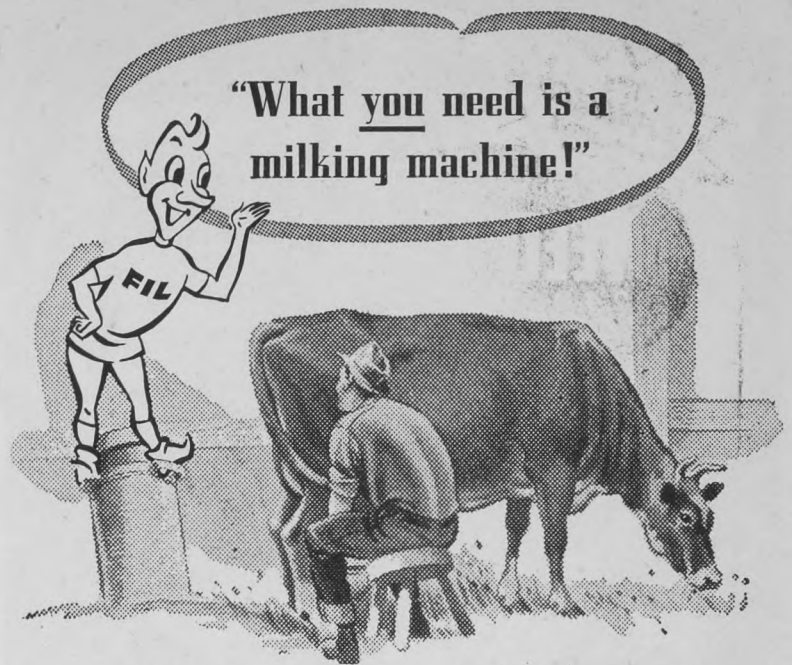
IN some instances great progress has also been made in the field of animal breeding. It would appear that the hog and poultry breeders have made the greatest advances. Thirty years ago the hogs which were offered for sale in the stockyards were either mongrels, crossbreds, or a mixture of Berkshires, Yorkshires, Tamworths, Duroc-Jerseys, or something else. To all intents and purposes we now have a standard hog in this country—the Yorkshire. The change which has taken place is not entirely due to scientific research, as ordinarily understood, but it certainly has been revolutionary in the sense that it has taken place within one generation. Scientists, administrators, marketing authorities and others have all had a hand in it. Having adopted the Yorkshire as the Canadian hog does not mean that everyone is satisfied with the Yorkshire in its present state of development.

The poultrymen have gone through an experience that closely parallels that which has been outlined above for the swine breeders, but in a different way. The poultryman must keep an eye on meat and eggs. The poultry scientist wants to produce a bird that will lay at least 200 eggs a year and still produce a carcass that is acceptable to the consumer, with an economical gain in weight. To a great extent he has accomplished it.

There isn't space to deal with other phases of agricultural research. But science is definitely on the march in other fields, dairy manufacture, or processing, for example; refrigeration, the marketing of perishable products, and a host of others.

The science and practice of agriculture has made tremendous progress in the last 50 years. No one knows what will happen in the second half of this century. But what will happen will probably be a reflection of the amount of study and research that we devote to our problems. To paraphrase Pasteur, "Science continually opens new fields to our vision."

(NOTE: Dr. V. E. Graham is Dean, College of Agriculture, University of Saskatchewan, Saskatoon.)



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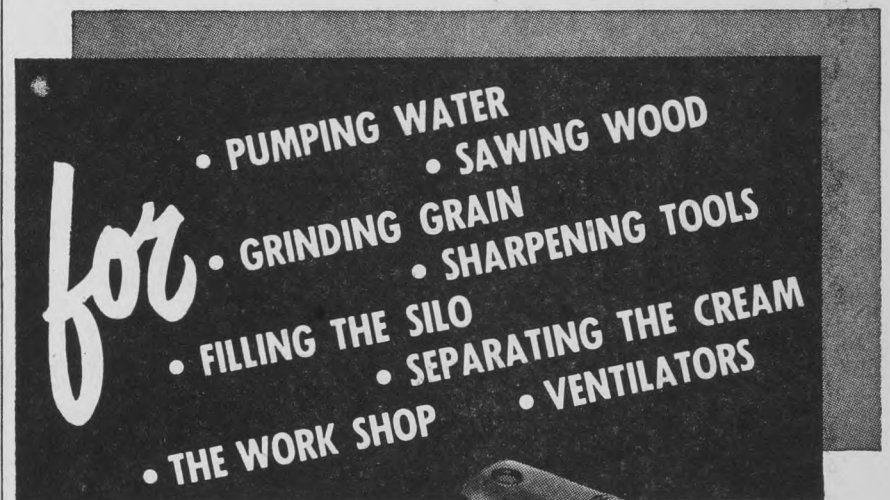


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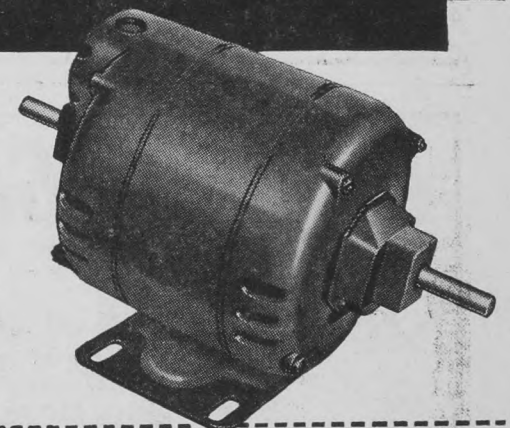
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Expanding Australia's Beef Herds

Long distances from production to consumption areas and poor rail facilities lead to air transport of fresh killed beef

by LES BINGHAM

DESPITE active competition from other nations, South America was the source of the principal meat surpluses entering world trade during the first 30 years of this century. Present conditions in Argentina, Brazil and Uruguay indicate an increasing future home consumption resulting in lessened volumes for export.

Regardless of how great the possibilities of expansion may appear in some areas, particularly in Australia and Rhodesia, any increase in production is likely to be slight in comparison to the physical need. The meat-eating peoples of the earth must now face the fact that the limits of world geographical expansion in beef cattle production have almost been reached.

Australia is one of the few beef-producing countries where expansion is still possible, although for half a century up to 1946 the industry there remained practically stationary. Today, with immigrants pouring in from all over the world—in the vicinity of 200,000 new Australians arrived during 1950—it is realized that the industry will have to expand considerably if it is to provide sufficient meat for Australia's own requirements, and even more if supplies to Britain are to be maintained and increased.

To meet its obligations under the 15-year meat agreement with Britain, plans for the steady expansion of the industry are being put into effect. The numbers of beef cattle are already showing a considerable increase. Beef

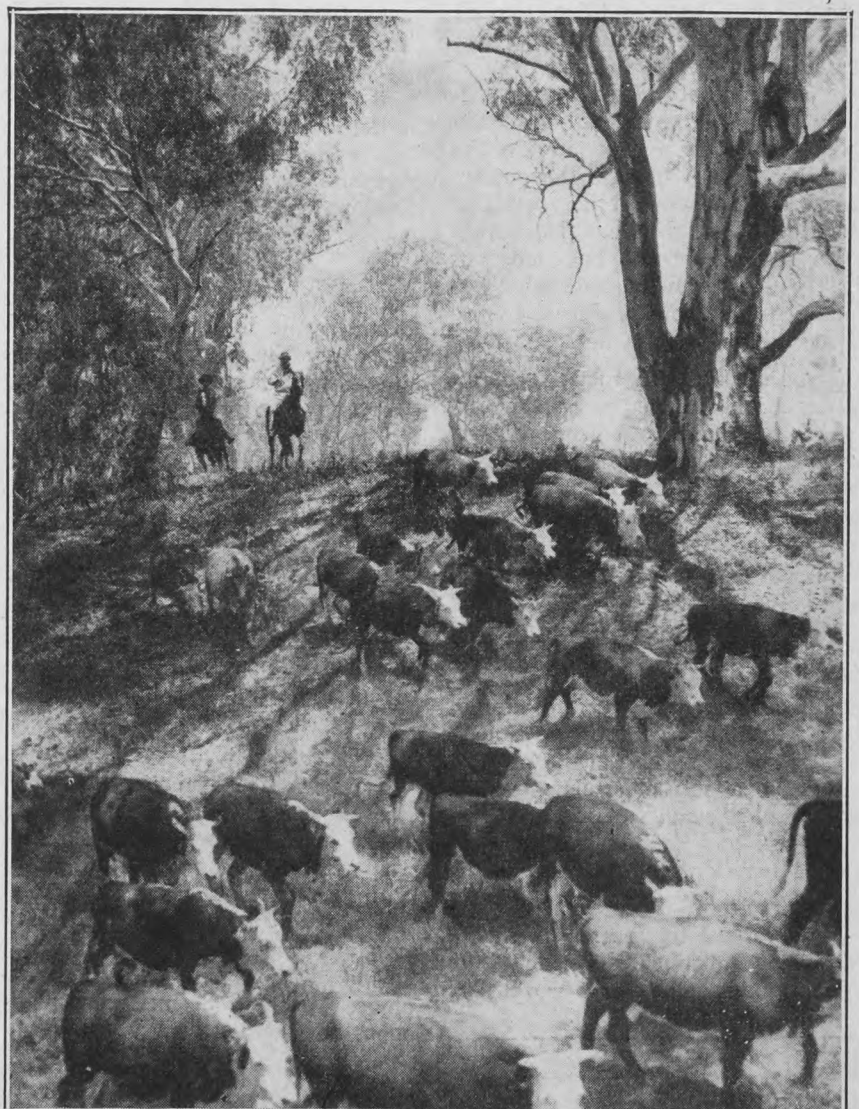
cattle in Australia at March 31, 1950, numbered 9,700,000, representing an increase of 5.1 per cent on numbers at March, 1949.

Perhaps the chief reason for the industry's previous stagnation, and still the greatest problem to be overcome, is that of the great distances from the breeding areas to the outlets. The Northern Territory alone has an area of 523,000 square miles with no local outlets.

For railings to ports in North Queensland cattle from the Northern Territory have to be walked at least 250 miles to the railhead at Dajarra. Then follows a rail journey of 582 miles to the port at Townsville, or of 1,413 miles to the saleyards at Brisbane. In West Australia cattle travel at least 200 miles on the hoof from the Victoria River cattle country to the meat-works at Wyndham. All this travelling by road and rail means that cattle suffer a heavy loss of condition.

THE main beef cattle breeding grounds are in Queensland and the Northern Territory. Each year as soon as the inland river systems are in flood cattle are walked southward for fattening in what is known as the "Channel Country."

This "Channel Country" is an area of roughly 8,000,000 acres in which four great rivers—the Bulloo, Cooper's Creek, the Diamantina, and the Georgina—overflow their banks every year following the monsoonal wet season in the north of Australia. These



Mustering cattle at Merawah Station, Boggabilla, N.S.W.

rivers spread out over a vast area of almost flat country in thousands of small channels, producing rich, natural clover, grasses and herbage. For fattening cattle these conditions are ideal.

The overlanding from the breeding areas to the fattening country is long and hard, the journeys probably averaging about 400 miles. After fattening in the channel country cattle again have to be walked eastward to the railway systems of Queensland, or southward across sandhill country in South Australia. The cycle is therefore one of cattle raising-moving-fattening-moving.

It will be readily seen that the underlying problem is one of transport to cut down those long journeys on the hoof. British built diesel-engine road trains are already at work, but their use is limited by lack of roads.

IN an effort to speed up the cycle—move cattle into the channel country, fatten, and move out to the abattoirs all in the space of one year—it is proposed to build roads into and out of the fattening areas. Opinions among cattlemen differ as to the value of this move, some reasoning that the maintenance of roads in an area subject to annual flooding can in itself create a problem.

R. G. Casey, Minister for National Development, recently stated that he hoped the present construction of new roads and improvements in watering facilities would enable the number of cattle fattened in the channel country to be doubled.

New railways could provide the answer to the problem of transport. Shortages of manpower, steel and rolling stock mean that any considerable program of railway construction is impossible at present.

Perhaps the most spectacular advance has been the recent establishment of an inland abattoir at Glenroy, 195 miles southeast of Wyndham, to tap the rich cattle country of the Kimberleys in West Australia. This area has always lacked outlets. On May 10, last year, the first plane load—nearly six tons of chilled meat, quartered ready for export—took off from Glenroy for the coast. That load represented the killing for the first day of the new season.

With the plant in full production 300 head a week were killed. When the twenty weeks' killing season ended freighter aircraft had flown out over two million pounds of beef. This plant can handle prime cattle not sufficiently leg-strong to be overlanded to the meatworks at Wyndham.

The Wyndham meatworks can handle a maximum of 80,000 beasts in a season, yet the number processed has never exceeded 40,000. The possibilities of this airlift are obvious.

One problem still remaining to be attacked is that of heavy supplies of cattle being available in the period March to August, and only meagre supplies from September to February, these latter rapidly becoming inadequate even for home consumption.

The industry hopes to reach its goal by the steps outlined above, and by improvements in the quality of stock, and the extension of scientific research.

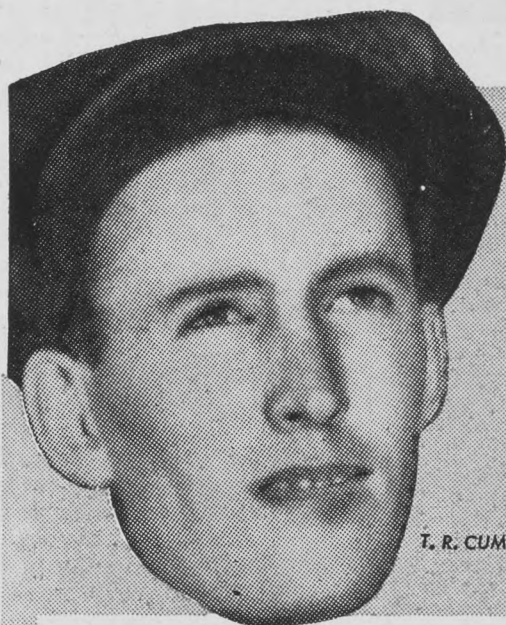
The task ahead is tremendous, but given fair prices and good seasons, the Australian beef cattle industry hopes to achieve over the next few years what it had no incentive to do over the past fifty years.

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"HERBATE wiped out severe infestation"

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MONTHLY

Annual Report— Canadian Wheat Board

The annual report of the Canadian Wheat Board for the crop year ending July 31, 1950, contains a great deal of interesting information. It gives an accounting for the five-year pool of wheat closed on that date, complete except in two respects. At that date there were still unsold some 92,000,000 bushels of wheat, to which an inventory value was given of \$178,587,000. In addition the \$65,000,000 which the Government of Canada is to add to the proceeds of sales is not included.

Producers' deliveries were:

1945-46 bushels	235,431,736
1946-47	335,158,639
1947-48	243,940,298
1948-49	293,011,116
1949-50	320,046,301
	1,427,588,090

Proceeds of sales (including inventory) were \$2,550,771,462. Total operating costs for the five-year pool were \$66,729,029. As an offset the Board recovered storage, interest and differential charges of \$43,011,615.

Cost of making various adjustment payments in respect to the five-year period amounted to \$1,738,455.

Distribution of Sales

To United Kingdom and other countries prior to the U.K. wheat agreement (during the year 1945-46) 208,000,000 at \$1.55 per bushel.

To United Kingdom under the wheat agreement 631,552,419 bushels. Approximately 340,000,000 bushels were at a price basis of \$1.55 and approximately 292,000,000 at \$2.00 per bushel. (The total quantity covered by the wheat contract was 600,000,000 bushels. The additional quantity provided was in recognition of the fact that a considerable portion of purchases by the United Kingdom were in the form of flour, in respect to which the milling offals remained in Canada.) To other countries subsequent to the Canada-U.K. wheat contract, excluding sales in 1949-50 under the International Wheat Agreement—196,000,000 bushels at an average price of \$2.36 per bushel.

To countries other than the United Kingdom under the International Wheat Agreement 55,681,000 bushels. Of this quantity 15,000,000 bushels were at \$1.80 per bushel and 40,500,000 at \$1.98 per bushel, Canadian currency. The two different prices would represent the same value in terms of the U.S. dollar.

To the domestic market 251,500,000 bushels. Of this quantity approximately 38,000,000 bushels were at \$1.25 per bushel, approximately 113,000,000 bushels at \$1.55 per bushel, and approximately 100,000,000 bushels at \$2.00 per bushel.

Board Selling Price—Class II Wheat

The following table shows price levels for Class II wheat (exports not covered by Canada-U.K. contracts or International Wheat Agreement).

Crop Year	High	Low	Average Selling Price
1945-46	\$1.55	\$1.55	\$1.55
1946-47	3.10	2.05	2.43
1947-48	3.45	2.37	2.88
1948-49	2.48	1.91	2.23
1949-50	2.41	2.04	2.16

Exports of Unmilled Wheat

The following table shows exports of unmilled wheat (not including flour) to principal importing countries in 1949-50:

	Bushels
United Kingdom	110,802,989
Belgium	10,253,597
Switzerland	8,948,395
Union of South Africa	6,764,823
Japan	5,075,505
Iran	4,274,108
Ireland	4,063,733
Israel	3,145,209
Turkey	2,114,933
Malta	1,796,433
Spain	1,550,138
Colombia	1,226,293
Norway	1,153,007
Egypt	1,041,600
Bolivia	716,168
Italy	617,775
Peru	427,757
Brazil	356,539
Mexico	349,440
Morocco	213,124
Tripoli	186,667
Costa Rica	130,000
Denmark	122,000
Ecuador	110,931
Finland	110,236
United States—	
Milling in bond	12,070,531
Consumption	1,416,803
Other countries	418,146

Total 179,456,880

The following table shows exports of flour, expressed as bushels of wheat, for the same year:

	Bushels
United Kingdom	19,481,787
British West Indies	5,770,201
Philippine Islands	4,894,920
Venezuela	2,674,381
Ceylon	2,143,858
Cuba	2,126,097
Hong Kong	1,522,481
British Guiana	922,824
Morocco	452,763
Costa Rica	382,873
Guatemala	323,847
Haiti	284,108
Portuguese Africa	277,578
Gold Coast	232,132
Panama	229,388
Ecuador	208,503
Dominican Republic	186,561
Surinam	181,472
Siam	146,880
El Salvador	146,650
Arabia	143,964
Colombia	130,482
China	138,947
Belgian Congo	108,171
Nicaragua	101,511
Other countries	2,467,526
	45,679,905

Wheat Exports by Ports

In 1949-50 wheat exports through eastern Canadian ports amounted to 98.8 million bushels, Pacific Coast clearances were 61.3 million bushels and 5.5 million bushels were exported through Churchill. Export shipments through eastern United States ports amounted to only 143,000 bushels. This is in great contrast with conditions of pre-war years, when a substantial part of Canadian wheat exports went out through ports of the United States. At one time there was a heavy movement of wheat through New York, largely in the holds of passenger liners, on which low freight rates often applied as it was regarded as useful ballast.

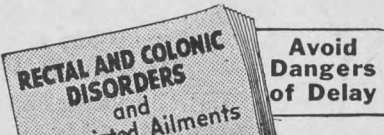


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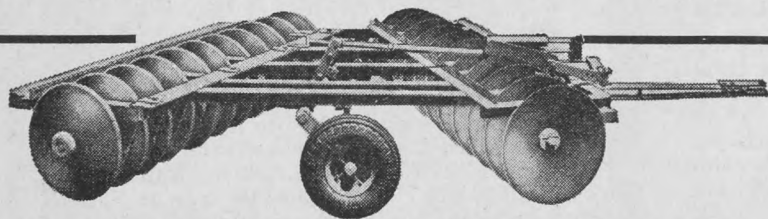
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COMMENTARY

Oats

The Wheat Board was the sole marketing agency for western oats and barley during the crop year 1949-50. Slightly more than 80,000,000 bushels of oats were received from producers. The following table shows distribution of sales by months.

	Bushels
August, 1949	6,843,319
September	8,816,078
October	11,158,399
November	11,653,206
December	5,886,795
January, 1950	3,693,156
February	5,020,729
March	5,855,812
April	4,057,431
May	3,534,331
June	3,039,441
July	8,817,105

Balance of 1949 crop held by the Board at end of year 1,826,413

The report says that the Board sold oats freely throughout the crop year to the extent that its supply position permitted. This policy permitted an early winding up of the 1949-50 crop account and gave the new 1950 crop practically a clear field in sales operations.

In selling oats the Board made use of the Futures market in respect to all except 12,640,000 bushels. The latter quantity was sold "flat," i.e., without exchanging futures contracts with buyers.

During the crop year 19.1 million bushels of oats were exported, of which the United States took 17.1 million bushels while 1.4 million bushels went to Belgium and .5 million bushels to Switzerland.

Barley

Board receipts of barley in 1949-50 amounted to 53,258,000 bushels.

The following table of the Board's selling prices indicates that the price trend was upwards during the first eleven months of the crop year except for a price recession in December and January. There was a slight decline in prices during July, 1950.

	No. 3 C.W. 6 Row (cents per bushel)	No. 1 Feed (cents per bushel)
August, 1949	132	125 1/4
September	149%	136 1/2
October	155%	139%
November	159%	141%
December	151	131
January, 1950	139 1/4	119 1/4
February	140%	120%
March	161%	133
April	174%	141 3/4
May	170%	142%
June	179%	151 1/4
July	173%	150 1/2

The following table shows Board sales of barley by months during the crop year.

	Bushels
August, 1949	6,386,088
September	6,603,511
October	7,223,776
November	4,126,609
December	2,543,190
January, 1950	2,120,570
February	3,366,076
March	4,833,681
April	3,296,571
May	3,075,099
June	2,883,801
July	6,070,062

Balance of 1949 crop held by the Board at end of year 729,928

Sales figures in the above table include open future sales contracts of 3,550,000 bushels as at July 31, 1950. In all about 34,000,000 bushels of barley were sold on the basis of contracts in the futures market.

Exports during the year were 17.5 million bushels of which 16 million bushels, mainly malting barley, went to the United States. Small quantities of feed barley were exported to Belgium and Norway. Neither barley nor oats were exported to Great Britain.

Flaxseed

During the crop year 1949-50 the Board received from producers only 24,219 bushels of flaxseed to be marketed on a pooling basis.

At the beginning of the crop year the Board still held something more than 10,000,000 bushels of flax from the 1948 crop, which had been received from producers on Government account at a fixed price. These holdings were reduced during the year to about 4,000,000 bushels, subsequently all sold by November 30, 1950. The total loss to the Government of Canada on account of the 1948 flax crop was \$6,406,199.

Amendments to Canadian Wheat Board Act

A Bill to amend the Canadian Wheat Board Act has been passed by the House of Commons with comparatively little discussion of its terms. However, this Bill did provide occasion for very lengthy Parliamentary discussion of the \$65,000,000 contribution which the Government of Canada is to make to the final proceeds of the pooled sales of wheat for the period 1949-50.

One provision of the Bill makes it possible for the Canadian Wheat Board to make an interim payment on some grades of wheat without extending the same payment to all grades. Although it was not so stated, this provision might be made use of in connection with the current year's crop. Conceivably when all grades of milling wheat are disposed of, and there still remain, as seems likely, large quantities of low grade wheat, an interim payment might be made which would apply only to the higher grades.

Another provision enables the Board to close out its accounts for a pool period at an earlier date than would otherwise be practicable. This would be done by transferring remaining stocks of wheat from the old pool to the new pool, at a price which would be considered fair to both. In discussing the Bill the Minister of Trade and Commerce, the Rt. Hon. C. D. Howe, made it clear that while the government would be responsible for the price basis of transfer, it would assume no financial risk.

It has previously been pointed out on this page that in the event of large carryovers of Canadian wheat again accumulating as has been the case at certain times in the past, it might become necessary for the government to intervene by assuming the burden of a carryover. Otherwise a heavy cost in this connection might rest upon producers, to an extent that could create dissatisfaction with the present system of marketing. Quite evidently that is a problem which the government has not yet undertaken to deal with.

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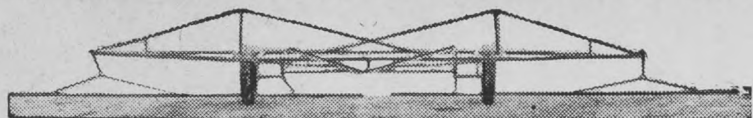
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Far North Gardens

Continued from page 14

is one of the most famous in the North and one of the most successful.

Mr. Ausland maintains an exceptionally fine and extensive garden, growing all the vegetables, tomatoes and cucumbers included, needed by family and help, with a surplus used to supplement the fish diet of the mink.

Practically every mink ranch visited revealed the same situation, vegetables in quantity for the house and a surplus to mix into the mink ration.

At Buffalo Narrows, the usual gardens are to be found and an occasional small patch of grain. In 1949, a patch of mixed grain grown from chicken scratch feed, yielded a good crop of ripe grain by August 15, weeks ahead of the time when a killing frost would normally be expected. Sample heads of wheat, oats and barley from this patch indicated that with good seed and proper cultural practices, these three grains could be grown successfully.

Here and there along the Beaver and the Churchill in the western portion of the Churchill country, from the Beaver River to the Alberta boundary, alsike clover, timothy and other tame grasses are to be found in small patches, the results of droppings from feed used by freighting outfits in early days. While not in any sense conclusive evidence, these patches of forage crops suggest that such crops could be grown for seed in the area.

CUTTING back across the area to the Manitoba boundary at Flin Flon, equally interesting data was gathered. Eight miles southeast of the town Mr. Joe Gjorki has operated a truck garden for many years. He provides the Flin Flon market with high-grade products such as head lettuce, cabbage, cauliflower, carrots, onions and garlic. His six acres, carved out of a shallow valley between rocky knolls, has provided him with a substantial living. In the area are scores of similar spots that could be similarly developed.

Sixty-five air miles northeast of Flin Flon is the Island Falls Power Plant of the Hudson Bay Mining and Smelting Company. Superintendent Davis and many of the employees of the plant are ardent garden fans. Lilacs and other flowering shrubs, perennials such as phlox and peonies, as well as annual flowers and vegetables, are grown extensively. On the island of clay soil surrounding the village for employees, timothy, alsike and giant red clover were growing wild in profusion. The red clover was forty inches tall and the timothy heads were full of high quality seed.

Other samplings of northern gardens could be outlined, but sufficient has been said, perhaps, to prove that as far as gardening is concerned, northern settlements in the Churchill River basin in Saskatchewan can be self-sufficient. While it is not claimed that results obtained in gardens in sheltered and favored spots along lakes and rivers can be considered as a safe criterion of farming possibilities a few miles removed, it is suggested that such evidence does point to the desirability of further investigation.

Northern Saskatchewan soils are inclined to be primitive in nature and patchy in coverage. There would not

appear to be large areas of several townships each, that could be developed into settlements—at least not at the present time. What might be feasible would be settlements at favored spots along the rivers and lakes.

There are extensive areas in northern Saskatchewan where blueberries are the common ground cover, and others where excellent cranberries are to be found. Since prairie markets must import such a large part of their fruits, it would appear to be economically sound for the prairie provinces to examine, with considerable care, the possibility of improving the native fruits such as blueberries and cranberries and bringing them under cultivation in northern areas.

BOG and muskeg areas are another matter, and perhaps it is just pipe-dreaming to think of developing them as productive farm areas, but here are a few facts to think about before making too hasty a decision.

In northern Saskatchewan, particularly east of Montreal Lake, there are huge bog areas that in their present condition will never have economic value. If they could be drained and seeded down to forage crops they might be very important, especially in those years when the Saskatchewan prairies are dry and barren of feed.

Near Flin Flon, the mining company has developed a playground for the use of its employees and the citizens of the town. It is being expanded to include a golf course, as well as park areas, club houses, and lawns dotted with shrubs and flowers. Phantom Lake, as it is called, is well worth a trip north to see. It is a substantial development. Once much of it was just bog and muskeg.

The story of how a muskeg was made into a grassed area there, may be the key to turning thousands of acres of bog lands to productive use. Briefly here is how it was done. In May when the frost had only receded a few inches down into the muskeg, a bull-dozer and blade was used to shear off the top layer of moss, peat and debris. It was windrowed, piled and burned. Then a layer of a few inches of boulder clay was spread over the sheared surface, allowed to ripen in the sun, and finally seeded with lawn grass. In the meantime, of course, drainage ditches had been bull-dozed out, so the water level could be maintained on a favorable basis.

It is suggested that large areas of bogs east of Montreal Lake might be similarly sheared at relatively low cost. No clay would be required for spreading on the surface, as the peat is sufficiently shallow to permit subsoil being worked up into it. The cost would not be prohibitive. What is important is to carry forward some experimental work to determine whether such lands can be put to use.

If any readers would like to have more first-hand information about our great north lands, it is suggested that they plan a holiday trip to see for themselves.

Two points are now accessible by car, Lac la Ronge in Saskatchewan and Flin Flon in Manitoba. In addition, air lines are operating from such points as Prince Albert, The Pas and Flin Flon. It's time we knew more about our northern heritage, and high time we were doing more to develop it.

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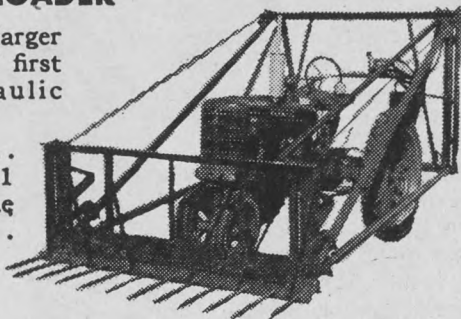
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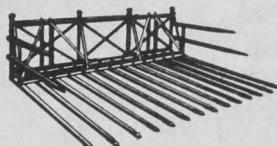
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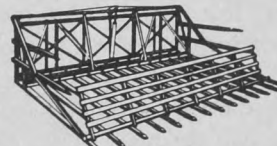
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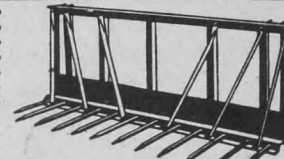
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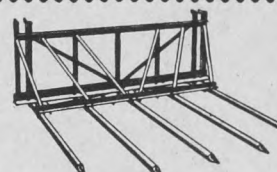
HAY BASKET Big 9x12' basket handles loose or baled hay easily.



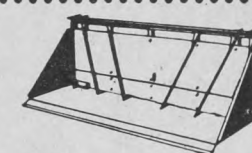
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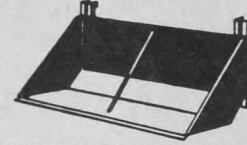
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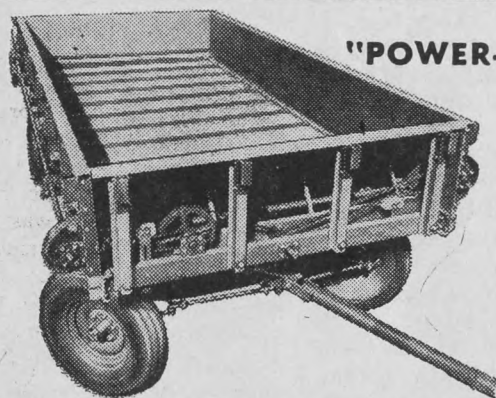
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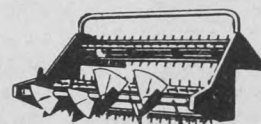


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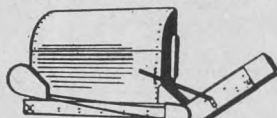


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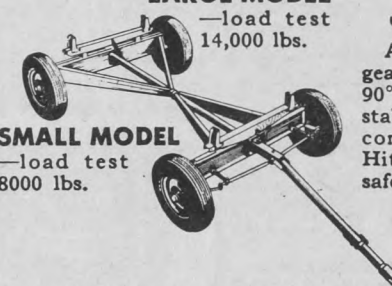
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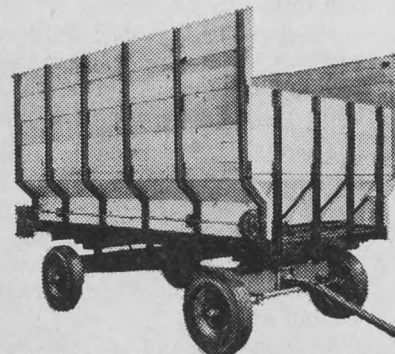
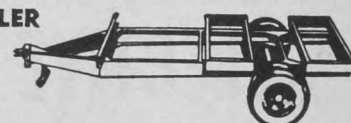


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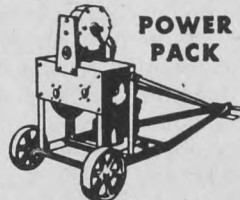
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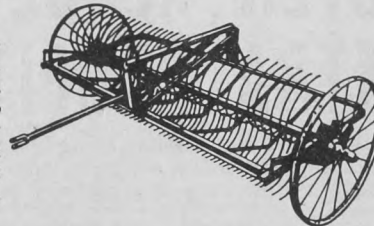
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Barney Winslow

Continued from page 16

depending on punky old sticks that had been there from the beginning. If they got by without a wreck, they'd make good money. If they didn't... well, some guys don't mind taking chances. But I didn't like the idea of Garvey sending young Winslow down there with them, even though it was the only job open in the mine and the kid had agreed to tackle it.

The shaft was 150 feet deep. Men went down and ore came up in a big, barrel-shaped steel bucket hung on the end of a cable. Hoisting power was a compressed-air donkey engine at the top of the shaft. All second-hand, of course. Either the hoist or the compressor that supplied it with air broke down regularly. When that happened the bucket couldn't move and you climbed up or down the shaft by a rotten runged ladder.

The bucket boomed as Axel and Mike Janovitch loaded it with drill steel. Then they climbed on its rim, standing there and holding the cable with their hands. The hoistman who ran the donkey engine eased off the brake lever and down the shaft they slid. When the bucket came up again, Garvey and the kid and I would go down.

I DON'T think Winslow had ever been in a mine before. He stood there bug-eyed, swallowing at his Adam's apple. Our shadows moved in the yellow glow of our carbide helmet lights like long black scissors. Mica crystals winked balefully. Nervous, Winslow fumbled for a cigarette.

At the flare of the match Garvey spun around. He slapped the smoke from the kid's mouth, slapped him again when Winslow struck back in an instinctive flare of anger. Then he jerked his thumb toward a signboard, shadowed and crusted with dirt, that hung barely visible over the tool box.

"That means what it says!"

The kid squinted at it—NO SMOKING. He was in the wrong but Garvey had picked a devil of a way to show him. Spots of color stayed bright on his cheekbones as we rode down in the bucket to join the others.

A horizontal tunnel branched out like the arm of an L from the bottom of the shaft. Mike and Axel were extending it along the ore vein. Their previous blast had left, as usual, several huge, loose slabs of rock hanging on the tunnel's roof and sides. These slabs had to be pried down before the boys could set up their air-powered drilling machines and start punching new holes into the rock to hold the powder for another blast.

Garvey snapped at Winslow, "Pick up a crowbar and knock that rock down. Then muck it into a tram car and dump it in the ore bins by the shaft."

The pinched look deepened on the kid's face. He licked his lips, staring at the dry, scabby ceiling. I knew how his imagination was running. Suppose the mountains grew tired of this scratching and closed in...

Garvey asked very gently, "Afraid?" That did it. The color leaped back to Winslow's cheeks and he strode to the tunnel end, fists clenched.

It took him a couple of hours to pry down the slabs. The air was blue with dust and stale powder fumes. When I went in to measure for timbers, I

found him crouched by an air hose, trying to get one clean, sweet breath to stop the pounding ache in his head.

He didn't walk with Mary that night. He was too sick even to eat his supper. He went out alone into the night and Lord knows what he was thinking.

Things went on like that for a week. Then one night Ma Owen asked me to see what was the matter with the damper on the stove. I was in the kitchen, hidden by the flue, when Mary got hold of Garvey.

"Jack," she said, "why don't you give Barney a chance?"

"So," he said, "he's come whining to you for sympathy."

"That's not true. I haven't seen him since..."

"Then who's been talking to you about chances?"

I flattened close to the stove. But Mary didn't tell.

Garvey said in the bleakest voice I'd ever heard, "You couldn't love a quitter, Mary. Not you... ever."

"He's not a quitter!"

"His father was."

"Ah, yes," she said, "his father was. And his father paid his price. Let it stop there."

"It won't stop," Garvey said. "Blood tells."

"I don't believe it! Barney could have found easier places to earn the school money he needs. But he came here where the whole past is against him. Oh, don't you see? He watched his father die. The shadow of it has ridden with him until he has to know. To find out if... if blood does tell. And he's doing it, Jack. He's sticking!"

Slowly Garvey shook his head. "Bullheadedness. That's not the answer. When a real pinch comes, he'll quit. I'm telling you, Mary, he'll quit."

He didn't quit by Saturday, however, when the Miners' Union put on a dance at Rock Creek. Winslow took Mary down in Ma's old Model A—without Ma. It burned us up to see them together. Oh, sure, she danced with the rest of us—until we got sick of seeing how glad she was when we gave her back to Winslow.

Garvey watched from the door, his lean face growing darker and darker. Before midnight he disappeared, and it wasn't until we started into the mine on Monday morning that we saw him again. His eyes were blood-shot, the veins in his temple stood out hard and blue, and we knew that the whole bottomless pride of the man had turned to acid.

He drove us that day, shirtless and gleaming with sweat, dead-bent on holding us to schedule. And everything picked that day to go wrong.

SHORTLY after noon he took me into the shaft with him to check on some new timbers for that rotten rock. While we were there the compressor went on the blink, leaving the hoist and the pneumatic drill machines without air.

Axel cursed and started to dismantle his now useless machine, ready to quit for the day. But Garvey wouldn't let him. His eyes fell on two sledge hammers leaning against the wall. He tossed one to Axel.

"You and Mike finish drilling those holes by hand."

Axel scowled. "We can't, just two of us."

It was true and Garvey knew it. It would take four of them to hand-drill

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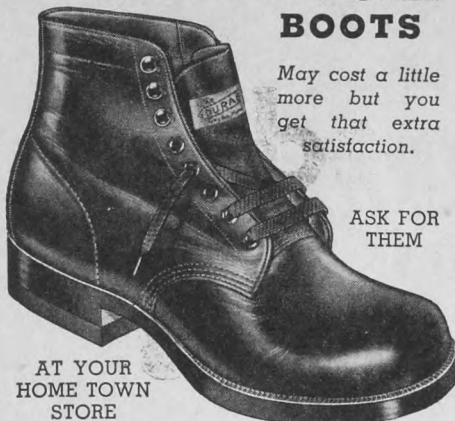
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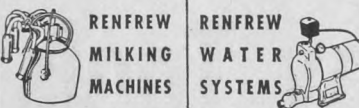
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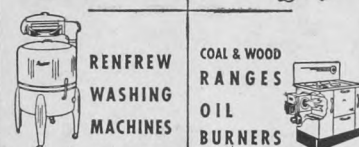


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the holes by quitting time. By now, finishing the day's work had become an obsession in Garvey's bitter mind.

"Winslow and I'll help you," he said. He gave the kid a tight smile. "Watch Axel and Mike for a minute, then you'll know what to do."

Axel opened his mouth to protest, then took a look at Garvey's face and kept still. He handed a piece of spike-like drill steel to Mike. Mike got down on his knees and held the steel in a hole. Axel drew back his 12-pound sledge and hit the head of the steel a ringing blow, driving it into the rock. The force of the blow jerked a grunt from him.

"Okay, Winslow," Garvey said. He hefted the other sledge hammer, the great muscles of him rippling in the yellow lamp glow. "Get hold of a piece of steel."

THE kid tried to do it. But he couldn't. His eyes kept following the mighty arc of Axel's hammer. Up . . . down . . . Smash! As if moved by something beyond his power to control, Winslow spread out his long, slim fingers and looked at them. You couldn't blame him. One misjudged blow and his hands would be crushed to a pulp.

Garvey balanced the hammer in his hands. In eleven years he'd never hurt a holder, but the kid couldn't tell that—not with Garvey's eyes glinting the way they were and the vein jumping in his temple. The kid stood there as if paralyzed.

Garvey said in that gentle voice, "It's what the job calls for, Winslow. Take that steel or get out!"

For a second I thought the kid was going to beg. Then he turned and climbed the ladder out of sight.

Garvey smiled. "There's always a weak spot somewhere."

Not fifteen minutes afterwards the air valve began hissing. The compressor had come back on and they could use the pneumatic drills again.

An hour later it happened. I was outside in the barn, cutting timbers. Garvey had come out, too, and was in the engineer's shack looking over some blueprints. I supposed the kid was in the kitchen with Mary, but I wouldn't let myself think how it must be with them now.

Just then someone ran from the tunnel yelling, "Explosion . . . shaft . . ." I grabbed my helmet and lamp and went for the tunnel as fast as I could go. Garvey was ten jumps ahead of me.

As we reached the hoist room, a puff of smoke billowed from the shaft. I turned cold when I smelled it. Wood smoke! The dust-dry timbers down below were burning. Later we figured out what must have happened. A stick of dynamite with a detonator cap still in it had somehow failed to go off at the last blast. Johnny Ryan, the mucker who had taken Winslow's place, had unwittingly scooped it up with the broken rock and dumped it into the bins. It exploded, blowing out the plank-side of the bin and setting the timbers on fire. Axel and Mike and Johnny were trapped down there, in what shape we didn't know.

In seconds Garvey had us whipped into order. Two men to go down the shaft with him in the bucket; me to wait on top and take charge of whatever came up; a crew to lay a line to the hydrant—why are hydrants always so far away?—and start spraying the shaft with water.

As Garvey swung with the others into the bucket, he told the hoistman, "God help you if you move this skip off the bottom before I signal! We may need to come up in a hurry!"

Behind us Winslow's voice yelled, "Wait!" Garvey ignored it. He nodded to the hoistman and they dropped out of sight.

Barney Winslow ran up. At the edge of the shaft he froze, staring at the moving cable. It stopped, jiggled as the men got out of the bucket, then was still. The kid swung toward the hoist operator, and I saw that Mary was behind him. In his hand he had that little black satchel with which he'd arrived at the mine.

"Bring up the bucket," he said. "I want to go down."

"Can't. Garvey's orders."

He shook the satchel under the hoistman's nose. "I can help, I tell you!"

The hoistman just looked at him. "Garvey'd kill me if I moved the bucket for you." It was all there, in the accent on the word "you." Memory of his dad, his own quitting just an hour before . . . Wildly the kid looked at the faces ringing him. No help was there, no confidence, no faith. The color ebbed from his skin, leaving him ghastly in the flickering light.

His eyes fell on the trapdoor covering the ladderway down the shaft. He wrenched it open. Smoke boiled out. For the space of half a dozen heartbeats he lingered there, looking down. A hundred and fifty feet of ladder—slippery, rotten, smoke-shrouded ladder—and the fire doing no-man-could-guess-what at its bottom.

His glance lifted to Mary. "I've got to go," he said.

Her eyes begged him back; then, as if realizing their betrayal, she shut them. All the pain and all the pride of the decision was in her whisper. "Yes, you've got to go."

We crouched on the edge of the hole, watching his light until it was blotted out by smoke. Then there was nothing to do but wait, the silent, strangling wait which only those who have stood outside a hurt mine can know.

ETERNITIES passed. All at once the hoist bell clanged. The hose-men shut off the water. The hoist chugged and the bucket came up. Standing on the rim, red-eyed and coughing their lungs out, were the two men who'd gone down with Garvey. Inside were Axel and Johnny Ryan. They were stunned and bleeding and dirty, but they came out under their own power.

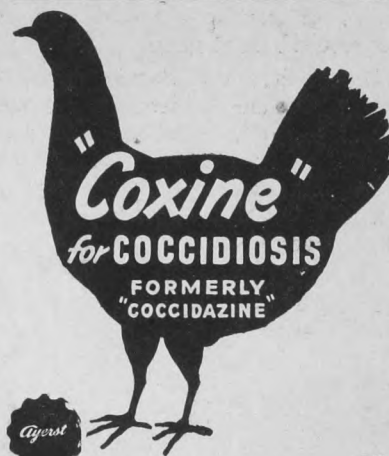
"Send it back!" Axel croaked and the hoistman dropped the bucket like a rock.

No signal to lift came again. Mary couldn't hold it in any longer. "Barney . . . ?" she asked. Her voice sounded as if it had been torn from her.

"Down there—with Garvey and Mike Janovitch," Axel said.

Gradually we pried the story out of them. The concussion of the blast had caved in the rotten roof of the tunnel. Mike was pinned on the floor, his right forearm caught under that mass of debris.

He was unconscious but alive. Axel and Johnny had been trying to dig him out when Garvey's crew arrived. But they couldn't free him without



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danger of starting a new avalanche that would bury them all.

It was then that Barney Winslow came down the ladder. Garvey was about to send for a timbering crew in a last desperate effort to hold back that sliding rock. The kid stopped him, pointing at Mike's face, black with congested blood.

"Carbon dioxide. He'll suffocate if he's here much longer. We'll have to cut him loose."

"Cut? . . ."

"His arm's crushed . . . would have to be amputated later on, anyhow."

"Can you . . ."

"Damn it, yes! Quit talking and give me a hand!"

THEY sent the others on out. And now it was Garvey down on his knees doing the holding while the kid's nimble fingers wielded the instruments. He had enough stuff in that old black bag of his father's to get by. And so they'd raced suffocation, trading Mike's useless piece of arm for his life. They had carried him down the tunnel through the licking flames, loaded him in the bucket and signalled to be lifted . . .

The fire was out. The kid got Garvey to lie stomach-down on a table in the boarding house while he doped the burns in his back. Garvey spoke to him for the first time.

"Why didn't you tell me, when I wanted you to hold steel down there, that you were saving your hands so you could be a surgeon?"

"Would you have thought it was anything but an alibi?"

Garvey studied the floor. But he was always honest. "No," he finally admitted.

"Besides," the kid went on, "I still wasn't sure I could be a doctor. If I'd



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go ahead when the . . . the pinch came . . . "Memory darkened his grey eyes and his voice got tangled up in his throat.

Garvey growled, "Well, you know now . . ."

He took it as always before he'd taken triumph, and no man could tell from the face of him what was in his mind. The company set the kid up for his last year in medical school. Garvey wrung a collection out of us to buy Mary and him a silver tea set for a wedding present, and when they were married in Rock Creek he stood up with them as best man.

But, oh, he was black-tempered, his eyes were bloodshot, and the veins in his temples blue and hard, the day he came back on the job.

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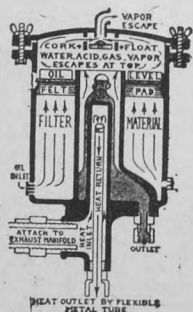
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Mix It Wet and Goopy

The trials and tribulations of an amateur who set out to stucco his dwelling, and the principal lesson he learned therefrom

by KERRY WOOD

WHEN we first bought and moved this elderly house a couple of years ago, we had no intention of stuccoing the building. But the outside walls were painted a most peculiar shade of brown. Probably this particular hue has never been manufactured before or since, but if any paint company brings it out again, they should be advised that the only proper name for this depressing shade should be "Baby-Brown." Mothers of healthy infants will understand.

So we decided that we could do one of two things: paint it a more attractive color, or apply paper, wire, and a stucco coat. In both cases, of course, yours truly was to do the work after hours and in spare time—if writers ever get any spare time. We reasoned that the paint job would have to be renewed every four or five years, whereas a stucco job was more or less permanent. Also, the price of the paint just about equalled the price of felt paper, vapor seal paper,

to it at all! Not a thing! I bashed four thumb nails, (the same thumb four times, that is) swallowed one tack, and fell off ladders on three different occasions and once landed smack on my fundament. But really, it was fairly simple, hard, sweaty, miserable, disagreeable work which lasted six weeks of spare time hours. Trying to tack felt and tar paper onto a perverse house wall when a strong wind is blowing and the darkness of an October night was closing in rapidly, —Well! It was to be a solo job, but my Present Wife found that every now and then when I got on the very top of a ladder and the wind whipped the paper around me and I had half a mouthful of tacks and my hammer had fallen and the ladder was slipping, she had to come to my rescue. So we, together, finally got house, garage, and the converted chicken-coop I call my office covered with paper and wire.

Winter came, and we all agreed that the addition of felt and tar paper



I was about to add more sand, but the children howled so much I decided to skip it in the interests of peace.

and chick-wire and nails of the stucco preparation. We liked the idea, too, that a thick coating of felt paper, sealed over by some good grade of wax or tar paper would certainly make the house warmer, while the finished coating of stucco would add even more to the effectiveness of the weather-proofing.

"It's a big job," my friends warned me. "Why don't you get a stucco man to do it and spend your time at writing? Every man to his trade, you know."

"Ah, but," I blithely pointed out. "Every other person in Canada is writing short stories, novels, autobiographies, plays, and poetry right now, hence I feel that I am equally qualified to stucco."

They shook their heads in a sad way and walked swiftly away before I could ask them to hold up the far end of that long strip of felt paper. Putting on the paper, two or three coats of paper, then the chick-wire on top of that, with nails spaced every eight inches apart, and bent upwards to support the stucco weight—Nothing

made a wonderful difference to the warmth of house and office. We were quite sure that we'd been very wise to choose the stucco job instead of a new paint covering. Every now and then I'd chat with a professional stucco man and discuss mixes, bought myself a plasterer's manual, making all sorts of plans and preparations to start stuccoing as soon as spring arrived.

But when spring came so did the trout fishing season, plus a special job of radio speaking, plus a rush job of story writing, plus a growing agitation on the part of friend wife to hire the stuccoing done by a professional. This agitation started when a cement man, doing some work in our basement, threw out a couple pails of rich cement mixture and I decided to slap this on the stucco-wire to test my aptitude for the work. The cement man surreptitiously held a watch on me and informed me that I required ten minutes to cover one square yard with stucco goo.

"At that rate, allowing the same proportion of time for screening sand, mixing cement and water, and carting

the stucco mud to your working surface, you should finish this job sometime in 1955—provided you give it all your spare time, that is!"

Of course, he really wanted me to hire him on the spot. And it was only by using the greatest restraint that I didn't.

We actually got started on the stuccoing around the middle of August on a blistering hot Saturday afternoon. Naturally, I chose to work on the south side of the office out in the sunshine. I reasoned that it would help dry the stucco faster. But wow! What it did to me!

THERE were a couple of bags of cement in the garage, while there was a nice heap of sand on the children's sandpile which I thought I could pilfer without fuss. That was an error. Every time I scooped out another pailful of sand, three young throats howled outraged protest. And sand and cement alone, despite the plasterer's manual's careful instructions, didn't make a good mix. Besides, the state of the goo was decidedly queer, requiring frequent dabblings and rubbings and careful pressing to make it stick to the chick-wire. "Are you sure it's wet enough?" asked friend wife.

Naturally I said yes. What would you say?

I talked to more stucco men and learned that the addition of lime to the mix helps the goo go on better. One stucco man also advised me to add hair to the mixture.

"It's a wonderful binder," he claimed.

But my own locks are getting decidedly thin, while the two young girls are trying to grow longer hair, and the young boy had a haircut the day before, so all in all—Then I learned that you can buy a special stucco-hair at the lumber yards, but my lumber yard manager advised against it.

"Only the very special jobs use hair," he said. "And yours—Well, if you're doing it yourself, it can't be a very special job!"

His reasoning seemed sound enough, so I didn't get any hair. But I did get lime. The quantity of lime to use in my wheelbarrow mixing pot seemed to stump the experts. Most of them told me to use a "dollop" of lime. Pressed for accurate details, they insisted that a dollop was enough. I went back to the lumberyard and the manager said:

"Oh, you don't need much lime. Use one in three, cement to sand, but just a wee 'smidgen' of lime."

I found that smidgen was not much more informative than dollop, but tucked away in a corner of my 20-volume encyclopedia was a stucco mix that gave me the essential dope. One-seventh of lime to cement. Aha! So I mixed up another barrowful of stucco mud and tackled the west wall of the office. South wall was already finished—and I'd even remembered to give it a sweeping with an old broom. This leaves the scratch-coat surface rough so that it can catch and hold the subsequent finishing coat of stucco. If you've never stuccoed before, I'll bet you didn't know that? I didn't! An experienced friend happened to come along just before the mud was dry and yelled for a broom.

So I tackled the west wall. Once again I found that it was hard on the right arm and put a blister on my thumb. It was very easy to get the

stucco mud all over me, Rondo, Heather, and Young Greg in the order named, but it still required a lot of labor to apply it to the wall.

"Are you sure it's wet enough?" asked my present wife.

Of course I was sure.

But this afternoon another dollop of spare time came along, which sent me out to the wheelbarrow and sand screen, scrounging six more pails of sand and two more of cement and two-sevenths of a pail of lime.

This time, I made a mistake. I put in too much water. The mix came out gooey and sloppy. I was about to add more sand, but the children howled so much about me raiding their sand pile that I finally decided to skip it in the interests of peace. I wheeled the barrow to the east side of the office, piled a blob of goo onto my hod (that's a professional name applied to an apple-box end board to which you nail a piece of rounded two-by-two, for handle) and picked up the trowel.

Well, say! It slapped on like a streak. One slide upwards, and that trowelful of goo covered a space six inches by eighteen inches, even and firm and beautiful. In no time at all I emptied the barrow and finished the east wall, getting only one eyeful of stucco mud this time when I struck some loose wire ends. In no time at all that east wall of the office was finished and I still had some spare time left. So I came in here to tell you all about it—be sure to mix your stucco-mud wet and gooey! That's almost the whole secret. Of course, you must also remember to use one-seventh of lime. And if you can spare the hair, I'm sure it would help bind the goo together more firmly. Oh, yes, remember to sweep the surface afterwards, and please excuse me for a moment while I go out and do that.

One more smidgen of spare time, and I'll finish stuccoing the office. That leaves only the garage and house still to do. The garage is slightly larger than the office, while the house—it's an eight-roomed house, drat it, and it seems to have ever so much wall space.

"Let's hire it done," sez my suffering spouse.

If the trout were biting better, I might be tempted. I've learned enough about stuccoing to realize that writers shouldn't do it. In fact, I'm almost tempted to write a manual on the Common Blunders of Stuccoing. But that's not the name I'd slap on that book, though. A much better title would be:

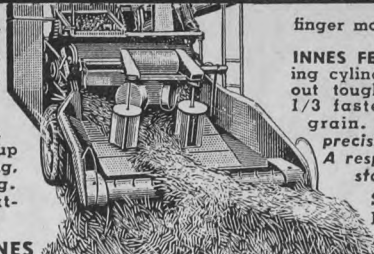
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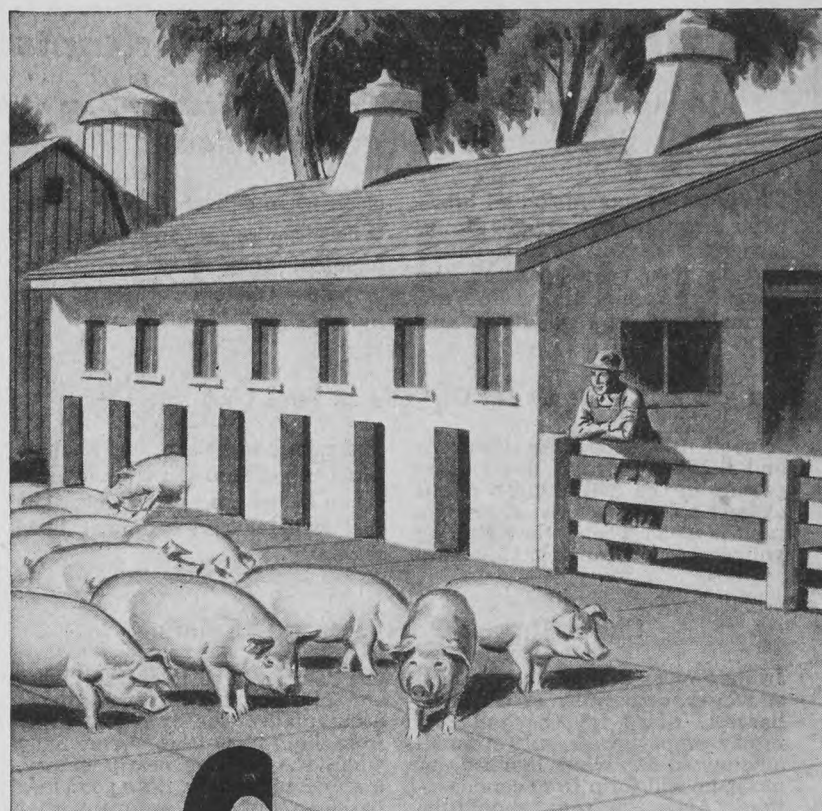
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Farm Service Facts

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The total cost of fuels and lubricants consumed by a tractor during its useful life will at least equal, and in most cases, exceed the original tractor cost. Gasolines are normally in good condition and

clean when delivered to the farm. When they're properly stored and handled, they stay clean, and help keep tractors working at their full capacity.

Don't Let Dirt Get in Fuel Line

A good deal of tractor slowdown and field stoppage is due to dirt getting in the fuel line. To guard against this, an overhead storage tank is ideal. Then, when fuelling your tractor, be sure that the hose

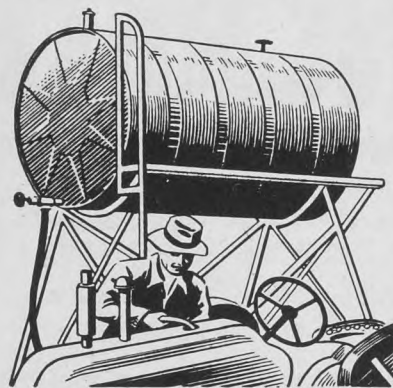
and nozzle are clean, and that no dirt can get into the tractor tank. As an added precaution, check the fuel strainer and sediment bowl regularly.

Check These "Good-Storage" Points

In the "long storage" seasons, such as winter, or between seeding and harvest, don't let the tank go nearly empty, with only a small amount in it. Keep it filled, or moisture will form from condensation. Also, the tank should be slightly higher at one end, so that

the delivery pipe is at the higher end, allowing any foreign matter to accumulate at the lower end, away from the gravity feed. Occasionally when the tank is nearly empty, and before refilling, it's a good idea to clean out any sediment that may have collected. You can do this by opening the drain plug and drawing off a few pints of gasoline.

The trend today is toward the farm fuel storage tank, partly because it allows faster, safer and cleaner refuelling of the tractor, and also because its big capacity allows an ample supply of fuel to be kept on hand at all times. If barrels are being used for storage, and you find it more convenient to stand them upright, make sure that they are tilted a little. This cuts down on the moisture they may take in from rain, dew or snow that collects on the barrel head. It is also important to keep the bungs drawn tight, as suction created by the cooling and contraction of the gasoline may be enough to suck in some moisture.



Proper storage and clean handling of fuel helps tractors run better.

Follow These Simple Safety Rules

Check on Provincial and fire insurance regulations before locating the tank. There is always some fire hazard when close to a building. Be careful not to spill gasoline. Do not smoke when handling fuels. The tractor should

not be fuelled when it is very hot, or with the engine running. As an additional safety measure, the tank should be well grounded. Many farmers also ground their tractors before filling.

Oils and Greases Need Clean Handling, Too

Don't use "just any old can" for measuring or handling oil. The can should be kept covered when not in use. As an extra precaution, it should be wiped and cleaned before using. Dirt should also be wiped off the filler plug on the tractor before oiling up. If the oil storage barrel is on a solid stand and a faucet used . . . place a drip pan under the faucet to catch the dribble.

Dirt and water are the twin

enemies of grease. When moisture gets in . . . most greases lose their consistency. Dirt in the grease produces an abrasive which wears on the bearings instead of protecting them. To keep grease of good quality, take these precautions: (1) keep the grease container well covered, (2) keep it in a dry place, (3) don't put dirty grease back in the can, (4) use a bucket gun to keep grease clean, and don't allow any dirt to get into the grease when filling the gun.



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- Reduce danger of fire
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Frog Farming

Continued from page 17

pole stage. This is governed somewhat by location. For instance, jumbo tads in Louisiana pass through the metamorphosis stage at one year old.

In Canada they transform under two years. This is an asset, the creature grows faster in the tad stage than it does in the frog stage. Jumbo tads are scavengers and will eat almost anything from oatmeal porridge to fish and groundhog. When confined in pools or open pens and well fed they will attain a length of nearly seven inches before transforming. A tad of this length will transform into a three-inch frog.

TADS will transform in periods of drought regardless of age: nature's way of providing for her children. When this occurs in the wild, the variation in size of the frogs is remarkable.

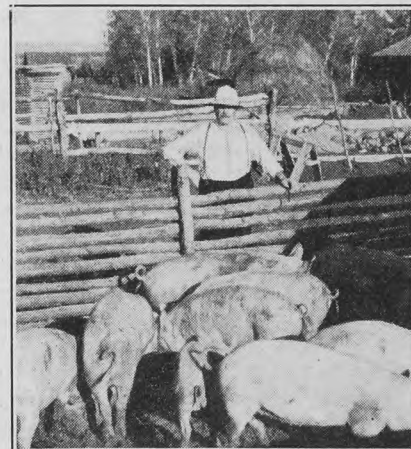
Frog ranching has gained great headway in Hawaii, where the amphibians are classed as livestock and called by the natives, strangely enough, Mountain Chickens.

In the state of Washington, in order that people may farm frogs under existing laws, the bullfrogs are legally classed as fur-bearing animals, saving the legislature a lot of work.

However, such has not always been the case. When first introduced into Washington the frogs were legally game fish, until two enthusiastic Nimrods abandoned rod and fly in favor of small-gauge shotguns. Then the nimble-minded legislature resourcefully declared them song birds and legally entitled to protection as such.

Canadian Wild Life Clubs have practically overlooked our bullfrog as a vital source of revenue from American tourists. The American fisherman always welcomes an opportunity to catch a mess of frogs. It isn't the thrill he gets by catching a jumbo, although this can be exciting. It's the mouth-watering thought of enjoying its delicious meat. Frog Legs a la Newberg. It is more tender than spring chicken.

Canada, with its thousands of streams and lakes well stocked with aquatic plants and insect life, is the natural habitat of bullfrogs. Let us all thrill to that deep bass chorus rolling over the water in delightful crescendo. We cannot with indifference allow these valuable amphibians to be erased from our shores.



[Guide Photo.]

In 1946 John MacMillan and his sons, Angus and Sandy, of Clandonald, Alta., averaged 80 per cent selects on pure-bred Yorkshire pigs.

What To Do about Dairying

Prominent western dairyman analyzes the problems of the dairying industry

THERE are many signs pointing to the fact that the Canadian dairying industry is not now in an enviable position. If satisfaction depended on high retail prices for dairy products, there would be little to worry about. The fact is, however, that despite retail prices of 62 cents a pound for only moderately good cheddar cheese, up to 80 cents per pound for creamery butter, and prices varying between 18 and 20 cents per quart for city milk, dairy production is actually declining, and no rush of producers to get back into what would appear to be a very profitable branch of the industry is evident.

Some of the practical problems of the dairy industry were discussed not long ago by Gordon Loveridge of Grenfell, Saskatchewan, president of Saskatchewan Co-operative Creameries, before the Agricultural Graduates Association of the University of Saskatchewan. Of the importance of the dairy industry in Canada, Mr. Loveridge said: "17 per cent of the people of Canada are directly dependent on the dairy industry for their living. This only includes producers and dairy plant workers, and not those who are employed in the manufacture of dairy equipment, or in the transportation of dairy products. There are five times as many dairy farmers as there are workers in the mines in Canada; twice as many as in the iron and steel industries; and as many as in the construction, maintenance and transportation industries combined.

"Production of milk is carried on in all the provinces, and is the most universal of any farming practice," he continued. "Twenty-seven per cent of Canadian milk production is in the prairie provinces, which we are so apt to think of as nothing but wheat-producing plains. Dairy cattle supply 40 per cent of the beef and 60 per cent of the veal consumed by Canadians, which, when combined with the value of milk production, makes dairying first as a source of farm income.

"The share of the consumer's dollar that gets back to the producer is larger than in most industries. For fluid milk it is 54.5 cents as compared with 44 for wheat flour. For butter it is 76.4 cents, as compared with 17.9 cents for the white bread it is spread upon. Cheese yields 33.6 cents, as compared with 20.6 cents for canned tomatoes.

"Yet, in spite of all the laudatory things we can say about this great industry, it is now suffering from some insidious disease which is sapping its vitality and causing it to be one of the least prosperous of our farming enterprises. Milk production in Canada for 1950 was down six per cent from 1949. Last May there was a surplus of nearly 20 million pounds of creamery butter. Now we are scraping the bottom of the supply bin, and importations will have to be made to carry us through until next May. Nearly all the major towns of Saskatchewan are short of milk, and the supply has been supplemented with milk powder made into reconstituted milk. Supplies of powder from eastern sources have almost ceased, and we are now importing powder to reconstitute milk in Saskatchewan, from the United States and New Zealand. The local dairy pro-

ducer is disappearing from around the smaller towns and milk is being shipped long distances from central plants to supply them. Production of cream never dropped so drastically as in the last three months of 1950; and at a time when there was more feed grain in the country than ever before in its history.

"... In 1950 there was a support price for butter at 53 cents. In comparison with the prices of other farm products this was a depression figure and there was no encouragement to produce milk for cream. Cattle which would ordinarily be milked, could be turned off for beef at very attractive prices. Calves were left to milk the cows and make better returns than ever before. Canada's population is now 14 million people... We have been geared to a population of 10 or 11 million and have not kept pace with our growing population. High employment and good wages are conducive to heavy demand for food products, and at the same time are siphoning off a lot of farm people who are attracted by many of the so-called amenities of life. Dairy herds are being reduced to a size that can be handled by the family, as hired help becomes harder to get and is often of a type that are misfits elsewhere. We are now embarking on a period of building national defences which will provide high employment and high wages. Dairymen are adjusting their operations to these new conditions by getting their herds to a size so that they can be independent of hired help."

TURNING to what can be done to meet this new situation, Mr. Loveridge emphasized labor-saving changes as essential: "The milking machine is about the only machine we have installed to lessen our manual labor. We still feed the cows a dozen times a day. The five-tined fork is still our constant companion. Most of us do the hard jobs of cleaning barns and forking hay exactly as it was done 50 years ago. Health authorities make more and more demands upon us every year, which requires more expenditure of labor. Labor is the major unsolved problem of the dairy industry, and radical changes are necessary in our production setup. We have got to get the machines to do the hard labor, even if we have to change our whole setup to do it."

Referring to the disappearance of the local producer-distributor from the smaller towns, Mr. Loveridge made this challenging comment: "I think this is partially due to the demand for pasteurized milk on the part of the consumer, as being safe milk from a health standpoint, but principally that the older people who have been doing this job are passing out of the picture, and the younger men are not inclined to do the double job. Probably the young wives, also, are not anxious to wash the few hundred bottles every day and fill them for delivery.

"I believe this is a trend that is here to stay, and that milk will continue to come from centralized plants and be distributed either through stores or by local delivery. Each operation will become separate and specialized. This may mean higher prices in country

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towns than in the cities, because of the transportation involved."

He believed that the producer must show interest in his product right from the farm to the ultimate consumer; and he referred to the recent sales promotion and public relations program sponsored by the dairy farmers of Canada, under which a contribution of a cent a pound butterfat to the extent of \$338,000 throughout Canada, was made by dairy producers. "The response was far beyond our expectations," said Mr. Loveridge, "... (and) ... the program of advertising is now under way in the magazines, daily and weekly newspapers. You can now hear radio jingles extolling the virtue of milk products as a change from soap. Rather belatedly, I must admit, we are applying modern methods of advertising to sell dairy foods."

IN concluding his analysis, Mr. Loveridge came back to production costs. "I wish," he said, "that some of our livestock men would swallow their pride and take a look at what is being done in the poultry industry, with deep litter, battery feeding, self-

feeders and cold housing. Egg production is now an exact science. Let us find out how they keep their flocks healthy. Maybe our conception of sanitation (the dairyman's middle name) is all wrong in keeping cows. Maybe we are shutting them away from valuable rays of the sun, or keeping them from health-giving food by keeping them tied in the stanchion. After all, penicillin is developed from a mold. We need lots of research dealing with present day conditions and about present day trends. . . .

"Research is costly, farmers cannot be expected to carry it on in any great amount. They are neither trained, nor set up for it. True, many of the ideas will originate with the farmer, but we must rely upon our universities, experimental farms and research laboratories to work out the solutions. Most of these institutions work with limited budgets. Let me suggest that should any farm group have a specific problem which needs extensive research, they give consideration to providing financial help to have that research carried out. We are constantly in need of new sources of finance for research."

Light Grains Mean Heavier Feeding

Quebec nutritionist tells Manitoba dairymen health and production require balance of nutrients in dairy rations

SPEAKING before a group of dairy farmers at the 66th annual convention of the Manitoba Dairy Association, Dr. E. W. Crampton, Macdonald College, Quebec, indicated that a dairy cow in production has specific nutritional requirements.

It is accepted among nutritionists that a cow can manufacture sufficient Vitamin B1, and there is no evidence that the addition of Vitamin D is necessary. However, an animal requires a certain level of total digestible nutrients (the digestible portion of fats, proteins, starches and sugars), a certain proportion of total crude protein, and also calcium, phosphate and carotene, the source of Vitamin A.

A 1,400-lb. cow producing 40 lbs. of four per cent milk or its equivalent per day, requires 23.3 lbs. of total digestible nutrients, 3.5 lbs. of crude protein, 64 grams of calcium, 42 grams of phosphate and 84 milligrams of carotene.

Most of these nutrients will not be supplied in sufficient quantities by a straight hay ration. The average hay intake is roughly two lbs. per 100 lbs. of live weight, or 28 lbs. for a 1,400-lb. cow. The cow needs 23.3 lbs. of digestible nutrients and this requires 47 lbs. of alfalfa, mixed clover and grass, or straight grass. The necessary total crude protein of 3.5 lbs. would be provided by 35 lbs. alfalfa, 55 lbs. mixed hay or 77 lbs. grass. The necessary calcium would be secured from 10, 27 and 46 lbs., respectively, of these feeds, while the necessary phosphorus is available in 40, 46 and 46 lbs., respectively, and the necessary carotene in 7, 14 and 20 lbs, respectively. For many of these nutrients more hay would be required than the cow would consume.

These figures reveal that if fair quality hay is fed no additional supply of carotene is required; and that there will be sufficient calcium, except when grass hay is fed. A hay ration is, however, deficient in digestible nutrients, crude protein, phosphorus, and, in the case of grass hay, calcium. This means that these nutrients must be supplied

in additional quantities from grain or some other supplement.

All breeders recognize that some grain mix must be provided for the producing dairy cow. If this mix has 75 per cent digestible nutrients 13.5 lbs. will be required in addition to the hay fed to give the necessary total digestible nutrients. To correct the deficiency of total crude protein a five per cent protein supplement must be added to alfalfa, 12 per cent added to a hay and legume mix and 16 per cent to a grass hay. In the first two, there is enough protein in the grain ration to make up the deficiency of protein. With grass hay a protein supplement is necessary. Total protein in excess of 16 per cent is never required.

Alfalfa and a legume-grass mixture provide sufficient calcium, but if grass hay is fed, 2½ lbs. of bone meal a day will be required to balance the ration. With any of the hays fed there will be some shortage of phosphorus. This will be corrected by adding two lbs. of bone meal to the alfalfa ration, and 2.8 lbs. to the grass-legume mixture, or grass hay.

The necessity of adequate salt in a ration is generally recognized. It is also wise to assume that there is a requirement for iodine. If cows are fed one teaspoonful daily, of a solution of one ounce of potassium iodide dissolved in a gallon of water, they will have sufficient iodine. Cobalt is also scarce in some areas. The requirement is about one-fifth of that of iodine; and cobalt can be fed in the same way. On the other hand, iodized, cobaltized salt can be fed. If water is available in quantities of less than four or five gallons per gallon of milk, it will limit milk production.

Dr. Crampton concluded his remarks by pointing out that many producers do not realize how much it is necessary to step up the rate of feeding, if light grain is used. To provide the same total digestible nutrients, more feed is required, and if the stockman feeds by measure rather than by weight, he should increase the rate of feeding.

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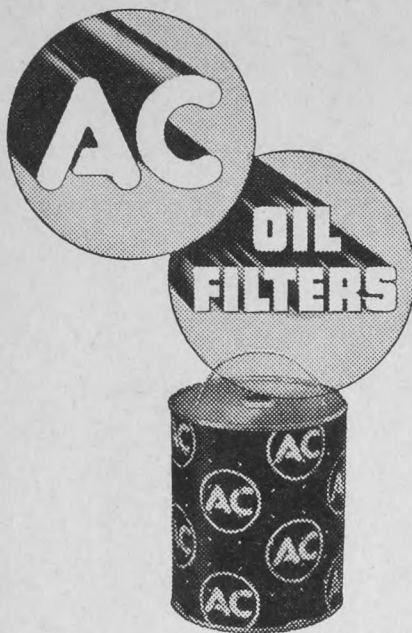


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Peace in Our House

Continued from page 10

"Because," she went on, "with the place in our hands, Johnny, or you can always come back and be welcome. You see, even after you're gone, there'll come springtimes. The apple trees and the plum trees will bloom again. When you get away, such things might call to the heart again, and you could come back. You could come sit a while and watch the blooms fall. You could go down to the spring and hear it laugh again from the red bank..."

I NOTICED Mr. Whitmore stopped chewing right there. He just held his cake still and tasted it on his tongue and watched a little blue blaze sputter from the end of a green stick of wood on the fading fire.

"You will, of course," my mother said, "want to come when Jenny's big rose bush by the gate blooms next spring..."

Jenny was Mr. Whitmore's wife. She had been dead a couple of years now.

And just now, I noticed Mr. Whitmore look off. He turned his head away from my mother and gazed off toward a little cedar knoll where generations of us Wyatts and Whitmores slept.

"Jenny," my mother went on, her voice sweet and gentle like the smile of babies and the smell of blossoms she had once spoken to me about, and she said, "she would want you to come back and get some of her red roses and take up there..."

She hesitated. I saw one single clear drop of water coming down the cheek of Mr. Whitmore next to me. It would stop at the wrinkles of his weather-beaten face, and swell and get a little bigger, and then jump over the gulley and roll on.

"But in case you couldn't come back," my mother said, "I'll do that for you every spring. Which is why I think it is so nice for you to let us have first chance at the place..."

Mr. Whitmore remarked, without looking at us, "He's coming in next week. He's coming for Christmas..."

Mother said, "I hope Johnny will be pleased that you are selling out to us."



"I didn't think I had to tell you to open up the bales when you mulch the strawberries!"

Mr. Whitmore did not answer that. He just gazed at the dying embers, and I went on to chopping him some wood. I had worked an hour or more, and had a crackling warm fire going when my father came in with the new deed.

He handed it to Mr. Whitmore. "I'll bring the truck," my father said. "I can run you right down to Squire Keadle so you can acknowledge it."

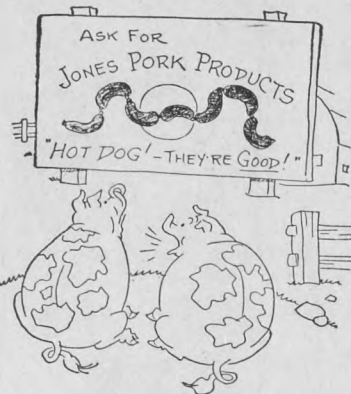
I noticed the fresh, clean, crisp paper rattled in Mr. Whitmore's rheumatic hands.

"Oh, Joe," he said, "I've been thinking. I hate to say what I am about to say. I hate to say it because Amy has just been telling me how pleased she is that you are buying the place..."

Mr. Whitmore hesitated there and looked off toward the cedar trees that swayed in the December wind on the knoll.

"But, Joe, I've been thinking it over. An old place like this... well... you can't exactly measure its value with a transit and a chain..."

He spoke low, and my father glanced at my mother.



"Do you believe in reincarnation, Sidney?"

"It has memories... memories that cluster around a man and hang on..."

He glanced up at the ceiling. I glanced up, too. I wondered what the old man saw on the ceiling, for I saw nothing except the knotty pine, smoked and old.

"Yes... things that have caused me to decide never to sell it..." He handed the new deed back to my father.

My father gasped. He glanced at my mother. She sat there, her frail thin shoulders drooped, and looking as innocent and harmless as a wilted petunia.

My father did not speak for some time after we started back down the road. The only sound was the crushing sound of the gravel under his big boots. The tips of his broad shoulders seemed to drop, and the glow and the strength seemed gone from his big red face. Once I got a little in front so I could glance up to see if I could read what I saw in his face. The thought struck me that the stronger a man is the weaker he can get when he's beaten.

My mother must have noticed that, too, for she took my father by the arm. "I'm so sorry, Joe," she said.

My father kind of shook her off.

I saw she was trying to encourage him in his hour of gloom, and it pleased me in the heart to see her do it.

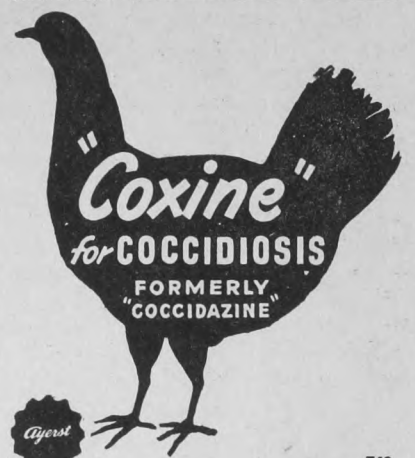
"Why, Joe," she went on, "you ain't beat. You ain't ever been defeated in the end. All things you have turned your hands to have come out right at last."

My father said, "Thanks, Amy. You did your part, Amy."

But I knew these words did not help him. I knew that my father felt he had lost the best deal of his lifetime.

For five days, he moped about the place, and his spirit was low, and he was a depressed and despondent man.

He did not go back to see how Mr. Whitmore was getting along with his rheumatism.



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I saw a distinct frown on his face when he came through the gate one evening and noticed Johnny Whitmore on the green bench with our Lucy, though he did not mention his displeasure to my mother as he would other kinds of displeasures.

I made it a point then to study the face of my mother to read what she thought of Johnny Whitmore back from school and on the green bench with Lucy.

What I saw in my mother's face was a gay sparkle from her blue eyes.

I WONDERED about the difference in the things my mother saw and the things my father saw. I guessed that my mother's eyes sparkled because she could see back of the whispering wind in the pines and the smell of blossoms and smiles of babies, while my father saw nothing he could wield like broadaxes and plows and trees.

But I couldn't see the outcome of the battle. I had to watch and wait. I waited until my father ambled off toward the barn. I noticed that he did not so much as glance toward Johnny and Lucy as he walked past the green bench. He was pouting.

But after he got out the yard gate, I noticed Lucy whispering to Johnny Whitmore, and Johnny got up and reluctantly followed my father.

It seemed to me Johnny shook a little, and I wondered why. I wondered if he was afraid of my father. Once, he glanced back at Lucy, and she motioned him on.

From the barn, Johnny must have gone to home, for he did not return with my father.

My father returned whistling, and when he came into the yard, I saw the light back in his face, and his chest out, and his broad shoulders up to their great-man-size again.

I followed him as he strode into the house. I followed to where I could see my mother working up the batter for a cake in the kitchen.

My father took my mother by both her slim shoulders, and kind of turned her face toward him. He did not speak just off. When he was loaded with something to tell, he liked to make my mother wait in agony and suspense . . . a kind of build-up.

"What is it, Joe?" my mother asked.

My father's chest swelled.

"It's just like you said coming down the path that day, Amy, I am a man who refuses to go down in defeat. I have just completed the best deal of my long career of good deals . . ."

"Oh heavens!" my mother said. "You excite me. What have you dealt for now?"

"Why, this Johnny Whitmore . . . fine boy . . . he just followed me to the barn and asked me could he marry our Lucy . . ."

"What did you tell him?" my mother said, calm as a kitten.

"What did I tell him? Why, the opportunity flashed on my mind like a streak of lightning. Johnny's the only child. That puts the Whitmore place in the family, don't you see?"

"Oh, I see," said my mother.

I think she would have hugged my father's neck, only she had the cake dough on her hands, and she just motioned for him to bend over.

"I love you, Joe," she said. "I knew you would win."

She kissed his strong cheek, and I knew the battle in our house was over.

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Alberta's War

Continued from page 15

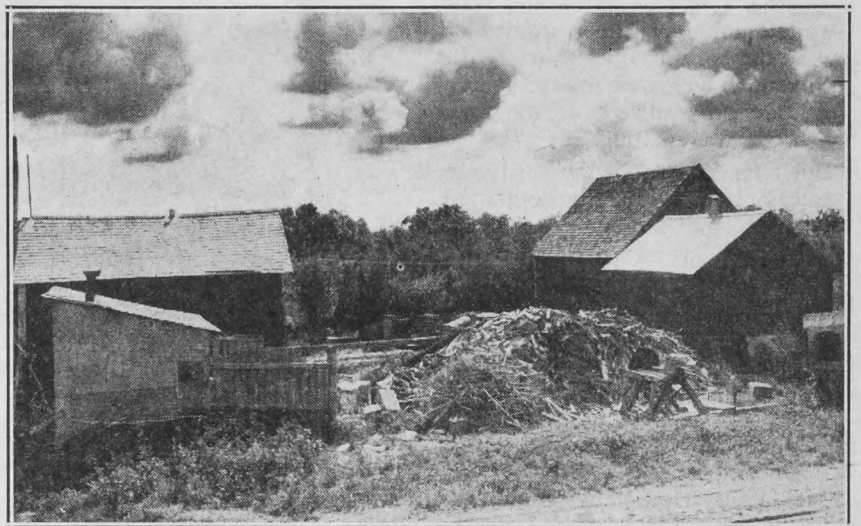
living flesh, as well as completely undereating barns, sheds and buildings. A single rat can eat as much as 50 pounds of grain in a year and destroy several times that amount. Rats have gnawed holes in the bellies of suckling sows; have killed young lambs and chickens.

IT would seem that in the West the farmer takes the worst financial beating wherever rats become entrenched. The experts tell you how to figure your loss from these rodents. If a farmer does not see any rats but has proof that they are about, he may be boarding 100 rats. He is out of pocket about \$200 a year. When seen occasionally at night, from 100 to 500 rats are present: they take from \$200 to \$1,000 of the farmer's money. When seen regularly at night and occa-

and becoming bitten by the fleas.

Through the past winter, public meetings have been part of the preparatory program for the expected spring invasion. Most migration will occur when snow is off the ground. Control in one area will send the rats scurrying to another. They are not stupid; they can spring traps, for instance, without being caught and, on the whole, do not invite death. They are often caught up in bales of hay or boxes awaiting loading on a railway siding: they take it in their stride, ride on to the first unloading point—past masters at concealment and at dealing with any unforeseen situation. The railway companies, incidentally, have promised the government the fullest support in reporting all traces of rats on, along, or about the rail lines of Alberta.

Farmers may expect to see "signs" before the nocturnal rats themselves are ever sighted, and, says Lobay,



Another example of an untidy farmyard in which rats can multiply undetected.

sionally in the daytime, the neighboring rat population is about 1,000; it's time to move out then, say the experts, with a grim attempt at humor; the rats own the farm and will come running to eat when the dinner bell rings.

As a health menace, the rat has few equals. The ghastly Black Death of English history was attributed directly to rat-spread disease. In the first two years of World War II, rat-borne plagues spread through Asia and Africa in epidemic proportions, causing 72,000 deaths in India alone. In recent years in the U.S.—all of this according to Supervisor Lobay again—there have been 318 deaths caused directly by rat-borne disease.

Rats are one of the few animals without bodily fear of living human beings. If attacked by one, a person may be marred for life or infected with rat-bite fever. Fleas pick up plague germs by biting sick rats, then transmit them into the bloodstream of both man and beast. In such respects, the Alberta Department of Public Health is still vitally interested in all anti-rat work, for some 3,600 square miles of south central Alberta is regarded by some health authorities as one of the worst *potential* plague areas in North America. This area contains gophers and fleas infected with Bubonic plague. The government has continuously warned residents of the area not to handle dead gophers—and, of course, there is no need for general alarm. Rat invasion, however, could be serious, especially during the summer months when rats take to the fields, inhabiting the gopher burrows

"unless every Albertan learns to spot the evidence in his locality, small colonies may become well established before the rats are seen." In general, rat burrows are significantly larger than those of mice—usually not less than two to two and one-half inches in diameter. Rarely do they show any mounds at the entrance, and in this they differ from the homes of most other burrowing rodents. Rat droppings are, on the average, two or three times as large as those of mice. Rats leave unmistakably larger footprints than do mice; and talc or flour scattered in a suspected area will serve to better identify the tracks.

Once spotted, rats must be eradicated.

Poison is far more effective than trapping or shooting, but even it has limitations. Two poisons are especially recommended for amateurs—Red Squill and Antu—since other more deadly concoctions (like 10:80, arsenic, Thallium Sulphate, etc.) are dangerous to both humans and livestock when handled by amateurs.

IN the poison war, the terrific resourcefulness and hardiness of the rat comes to the fore. Because rats have a peculiar ability to sense danger in every form, baits have to be highly attractive—sausage, salmon, apples, melons, carrots, etc., being favorites. Directions for turning these tidbits into lethal potions will be made available by local pest control officers. At all times, meats must be finely chopped, lumpiness must be avoided, and human odor on baits is strictly unde-

sirable: rats may not fear man, but they are well aware that human odor spells danger. Amazingly, rats receiving less than a lethal dose of some poisons (antu, for instance) build up a resistance and a strong dislike for it. When such "tolerance" has been built up, the poison should not be used again for about three months.

LIKEWISE, baits must not be overloaded with poison—rats instantly detect the menace. All baits have to be changed every 24 hours—in some ways, the rat is fussy.

Traps that have rat blood on them, or that have held a rat for any length of time, must be boiled—or no more rats. Likewise, trap baits must be tied securely: rats are adept at tripping traps from below, then stealing the bait.

One happy feature about rat poison is the entry of a new weapon—a deadly potion known as Compound 42. Prior to its manufacture, all poisons used against rats had to be "pre-baited"—that is, the rats had to be fed for a while on tasty, unpoisoned fare, then given the poison-treated bait. The indications are that no pre-baiting is necessary with Compound 42. Rats seem to "prefer" it; and, incidentally, it has proven deadly effective against

mice infestation. Compound 42 contains an anti-coagulating substance, which actually causes the rat to die from internal hemorrhage. Even when deathly sick (three to four feedings) the rats drag themselves back for a last lethal meal of the poison.

Fumigation is effective, especially in cleaning out burrows. Calcium cyanide dust, forced into burrows with a hand or pump gun, creates prussic acid gas which kills rats within minutes. Carbon monoxide gas—plain car exhaust—sent through a hose attached to an exhaust pipe finished them in ten minutes, provided exit holes are securely blocked to prevent dissipation of the gas.

The elimination of rat harborages—enclosures such as double walls, cluttered cellars, woodpiles and rubbish piles about the yard (especially where weeds have grown around them)—are "musts" following any clean-up campaign.

"All stored materials and granaries not on concrete foundations should be placed at least 12 inches off the ground," warns Mr. Lobay. "Keep them high enough so light shows underneath—rats hate light." Lumber should be piled on sawhorses. No broken panes can be left in basement windows.

NEW buildings should be constructed with rat-proofing in mind: two feet of concrete below ground, at least 18 inches above. Spaces between beams and studdings should be sealed with concrete or brick; door edges and other openings should be protected with 26-gauge metal sheeting; ventilation grids and louvers should have no opening greater than one-half inch, otherwise the rats will squeeze in.

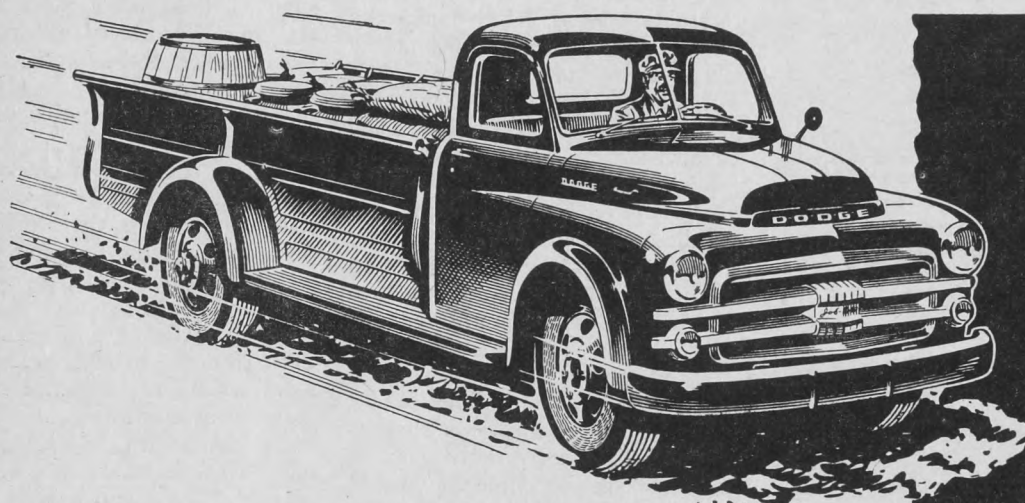
Waste food should be placed where rats cannot get it; garbage cans should have tight-fitting lids; and unsightly dump piles, common to all urban centers, should be burnt or buried regularly. Too often the waste heaps of both village and farm are literally moving with rats.

There is no truce in rat warfare. Once an extermination campaign is relaxed, the brown invaders take over for all time. They nest in inaccessible places, travel mostly by night. Rats avoid the open; possess an almost psychic sixth sense that warns them of danger. They become so filthy and disease-ridden that natural predators, such as dogs, soon acquire nausea at the sight of them. Cornered, they are fighters: in a cage in Philadelphia, one rat thrown in as food for a rattlesnake, managed to kill the rattler!

From various experiments, science

has reached the uncomfortable conclusion that in certain respects, rats possess greater cunning than man. This is partly because their sense of taste and smell is far greater than the human—but they are much quicker at finding their way around a maze of passages, have a definite sense of direction, can go for days without food and know, even without the benefit of light, when daylight should begin and darkness should end. Likewise, as Dr. Frank A. Beach, an American authority on animal intelligence, discovered, rats, even in one generation, are able to learn from man. Thus, a horde of 16th century rats could, conceivably, be wiped out in concentrated action by 20th century methods. Not so today's rats. A rat living on a farm, or in a city garbage dump, for one month will completely acclimatize himself to all local dangers and familiarize himself with every conceivable method of self-preservation. To top the incredible picture, even an atom bomb would have little effect on these ugly little crawlers of the dark: they are almost completely free from the effects of radiation!

Thus, when Dr. Alfred Romer, noted Harvard zoologist, was asked what member of the animal kingdom had the best chance of inheriting man's earth, he replied briefly: "Rats."



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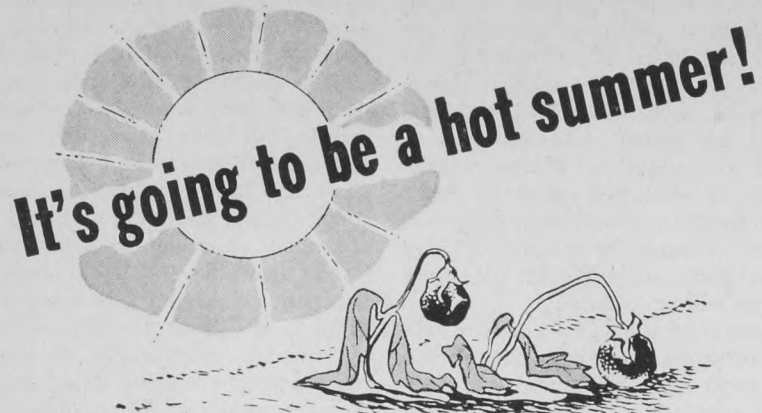
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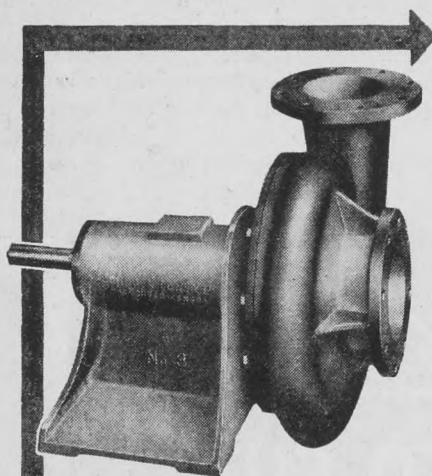
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Some Capon Problems

*This couple had troubles with their capons
but found it worth while in the end*

by KATHLEEN E. NOUCH

"AND then the justice, in fair round belly, with good capon lined—" I had been teaching those lines from Shakespeare for 20 years before I fully realized why the justice preferred to line his belly with capons! In fact, the word, capon, had never registered on me as being a male chicken which has had its reproductive organs removed! But now I know, for I have had my fill of capons in more ways than one!

We raised these birds in a little northern hamlet a few years ago. I had been coaxing my husband to keep chickens for years, for, after all, a grain buyer should be able to raise poultry "on the side." But friend husband was hard to convince, for he had never lived on a farm and he shied away from anything in the line of livestock. However, I finally wore him down until he consented to get 50 baby chicks from a hatchery. For two greenhorns, we did not do too badly that year, for the chickens thrived. We had fryers early in the season and were able to treat our city guests to sumptuous chicken dinners.

However, as the cockerels got older, the trouble started. They made the most unearthly racket crowing at the crack of dawn and making our close neighbors complain. Added to that was the fact that they fought each other all the time. Soon we were losing one a day in battle. The chicken yard became a shambles until we killed them off and canned them.

That settled it as far as Joe was concerned. He'd suffered too much to bother with chickens again. But I was too thrilled over those delicious fries to give up that easily. That winter I heard about caponizing cockerels. I got books on it from various libraries and Joe became interested again. If something could be done that would stop roosters from crowing and fighting, he might try another batch of them.

THAT spring we contacted an expert on caponizing and he convinced us to give them a try. Soon 250 chicks were delivered by express. This time we had a wonderful brooder house fixed up for them and I did not have to keep them in the house. All went well until they were six weeks old, the age when they were to be caponized.

We had to starve the birds for 36 hours before the operation. This was to reduce the size of the intestines and make the operation easier. Water was also withheld from them for the same period of time.

You can imagine the racket those chicks made during all that time. Add to that our fears that they would surely die before the expert arrived! However, they did not, and he came, so the proceedings began.

He laid each bird diagonally across a foot-square table. Both wings and legs were fastened down with strings to which were attached small weights. He plucked a few feathers from the back, then made an incision about one-half inch long between the last two rib bones, with a sharp scalpel. Then he placed a spreader in the cut to open it wide. With an instrument

that looked like a crochet hook, he broke the membrane around the tiny testicle that had to be removed. This done, he picked up a "sugar tongs" like gadget and carefully extracted the little white lump, cutting the fine string that held it. In a trice he flipped the bird over and did the same thing on the other side. It was all done very quickly, and the birds made no fuss. In fact, we made more fuss than they did as we stood off fearing that the worst was going to happen. But it did not. As soon as each bird was set on the ground, it walked away as if nothing happened to it.

At least most of them did. We had our fingers crossed, for the literature we had studied on capons had stated that if any were going to die, they would do so as soon as released. The expert guaranteed only a five per cent loss and he was right. Only three toppled over out of the first 100. It took all day to do our 250, and he charged five cents a head.

THAT night Joe and I were quite elated. Nature had been kind in that the day had been bright and sunny, a *must* when caponizing is to be done. The birds all looked fine when we left them for the night and we felt that we had really done something by introducing this unheard-of thing into our district.

But we counted our chickens much too soon. That night it rained, and someone had left the chicken house door open. In the morning we found 20 dead capons in a pile where they had huddled just outside the door in the rain. I went off to my school, three miles from the hamlet, feeling not too good about our project. Little did I know what was in for me when I got home that night. Joe met me at the gate. "The chicks are all going to die," he said. "Come and look at them."

The strangest sight met my eyes. Every one of those capons was bloated up under the wings as though they had balloons as big as grapefruit attached to them. They were running around this way and that and wheezing as if every breath would be the last one.

We had read about the danger of bloating because a chicken's skin heals too quickly to allow the gases to escape, but did not think that it would happen to our birds! Some of them had swelled up so much that they looked like those inflated rubber toys one buys for the kiddies, and they seemed to float in the air as they moved across the yard.

"Do something for them, Joe!" I cried.

"You do it," he replied. "You got us into this!"

I rushed to the house to read the instructions. The book said to sterilize a razor blade and puncture the skin to allow the gas to escape. I read it aloud to Joe who began to look green around the gills. "That's all you have to do, dear," I said, as I closed the book.

"Not me," he stated emphatically and promptly went back to buying grain.

I wasn't going to lose all that potential meat without a fight for it, so I

enlisted the help of our young son and his friend. For three solid hours those boys chased chickens and I slit the puffs under their wings. I started with the razor blade, dipping it each time into a lysol solution. But the wet blade did not work very well on the fine down on the skin, so I did the last half of them by sterilizing my sharp embroidery scissors and giving them a quick jab.

I had to go through that same performance every evening for four more days. But fortunately, the number bloated decreased each day until the last time only about 25 had to be done.

But when all the surgical business

was over, Joe came back into the picture. He began to feed them scientifically and bragged about "his" capons! He gave them every fancy poultry feed that his company recommended and exulted as they daily increased in weight.

We had quite a time explaining to our friends why our birds looked so dopey and sort of sick-like. You see, capons do not grow red combs, and they sit around just as though they are ill. Best of all, they never crowed or fought!

And all the hardships were forgotten when we started eating them. The meat was "just out of this world." As well as huge gobs of pale yellow

fat in them which was delicious for making cakes, the fat was spread out all through the meat. Not too much, but enough to make it juicy and succulent. The flavor was better than the most delicious plain chicken we had ever eaten.

When most of them were eight pounds and over, early in the fall, we shipped them and got grade "A," milk-fed for every one. The few that we kept until December tipped the scales at ten and 11 pounds and looked like small turkeys. It was really worth the effort after all.

We raised another batch the following year, and if we ever do it again, it will still be capons, even if Joe still

refuses to operate on the bloated ones. For anyone living in a small village or hamlet and who wishes to raise around 50 purely for personal consumption, it is really the only thing to do.

We found that Plymouth Rocks were the best for us to raise, but the Rhode Island Reds were good too. If a really heavy capon is desired, Black Jersey Giants, or Light Brahmas and Langshans are recommended.

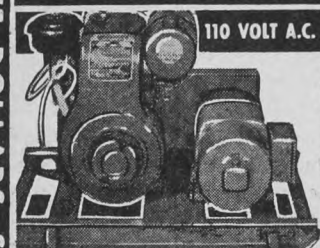
So if you are interested, try capons next year. Any public library or university extension department, or government pamphlet bureau will be able to supply you with the necessary information.

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ITEM No. 15—Double acting cylinder, 3" bore, 8 1/2" stroke. All steel hydraulic cylinder, will lift up to 7000 lbs. with 1000 P.S.I. line pressure. **\$21.45**

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Know Your Electric Motors

An electric motor should be suited to the job it must do, and the conditions under which it is to be used

by SCOT DUGUID

WHEN hydro comes to the farm and electric motors are in general use it is well to understand the job these motors must do. You can purchase a motor or two that will do several jobs for you until you feel like laying out more money to have a motor for every job, which is desirable because it eliminates the necessity of changing motors and hooking up wires and altering pulleys. Then, too, direction of rotation must be considered when changing motors.

There are three main types of motors which are used on 110 volt, 60 cycle, single phase, rural power lines, namely—split phase, capacitor start, and repulsion-induction motors. These motors have the following characteristics:

Split-phase: Low initial cost; no brushes, size range 1/20 to 1/2 horsepower; starting ability very low due to poor torque for starting heavy initial loads; suitable for use on small fans, washing machines, grindstones, corn shellers, grain cleaners, handy circular saws, shapers, home wood-working lathes or any other job where the starting load or force is low.

Simply stated, this motor can be used very successfully on any equipment which is revolving first before being pressed into service. For instance, your washing machine motor is turned on first, before the washing machine clutch is engaged. Your grain cleaner is not loaded with grain until the machine is in motion. Grindstones are turning first before a tool is to be sharpened. A circular saw is turning before the wood is to be processed.

Capacitor-start motors: Higher initial cost; no brushes; size range 1/60 to 1 horsepower; starting ability medium to good, due to a reasonably good torque for starting under an initial load; suitable for use on cream separators, refrigerators, potato graders, shallow well pumps, large fans, milk coolers, concrete mixers, drill presses, spray painters, stokers, or other jobs where the starting load of the machine is not more than twice the load of the machine after it has started to run. The above machines require about twice as much power to start them moving as is required to keep them running.

FOR example, most commercial refrigerators use motors ranging from 1/6 to 1/4 horsepower. They can operate very efficiently on these small motors because the capacitor-start motor is able to start even under a heavy pressure of gas in the refrigerator. A 1/6 horsepower capacitor-start motor has about 1/3 horsepower in starting power, but only 1/6 horsepower in running power. This is the reason you can operate your refrigerator so cheaply. Otherwise, the motors on refrigerators would have to be much larger in horsepower and size in order to start against the gas pressure.

Repulsion-induction motors: Initial cost about the same as capacitor-start motors, perhaps a little higher in some cases; starting ability very good, due to its ability to produce about four times its normal torque while starting a load; brushes on the commutator;

size range 1/6 horsepower and larger, suitable for all jobs handled by the capacitor-type motors mentioned, and all other heavier jobs, such as milk coolers, corn huskers, deep well pumps, meat grinders, grain elevators, feed grinders, or on any unit where the starting load is heavy. It is a good general purpose motor that can be used on any job, but is more costly than the capacitor or split-phase motor.

Bearings in motors are of two types—ball bearings and sleeve bearings (bushings). Most motor manufacturers build both types on motors up to 1/2 horsepower sizes. It is more a matter of individual choice than of importance in most cases. Ball bearing motors cost four or five dollars more than the sleeve bearing models. It is generally considered that ball bearings in small motors are only necessary if the motor is a high speed type running well over 1,800 r.p.m. Bench grinders normally run at 3,450 r.p.m. and are usually ball bearing equipped.

If a quiet-running motor is desired, all manufacturers provide a rubber-mounted motor up to the 1/2 horsepower size, called a resilient-mount motor. The standard motor is a solid base motor. Refrigerators and stokers are equipped with resilient-mount motors.

THE ordinary standard motor, produced in large volume, is the cheapest, and the frames of these motors are of the "protected" type. That is, they have openings to allow for cooling, but are quite well protected against normal dust conditions, weather conditions, and other hazards.

If the conditions under which the motor must operate are abnormal, then you might inquire first, before purchasing your motor, just what type is recommended, and what is available. You can purchase totally enclosed motors to operate in excessive dust conditions, explosion-proof motors to operate in gasoline pumps or dust-laden buildings. These motors are more expensive, but, if required, are a cheap investment.

Drill presses generally have the electric motor mounted vertically, and for such equipment a thrust-type bearing is generally recommended. It is important, too, that you can tell the dealer whether the motor is mounted with the drive shaft down or up. One position requires a thrust-out bearing; the other position a thrust-in bearing.

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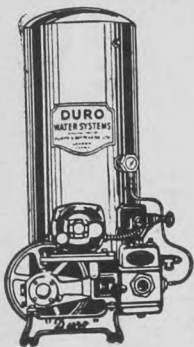
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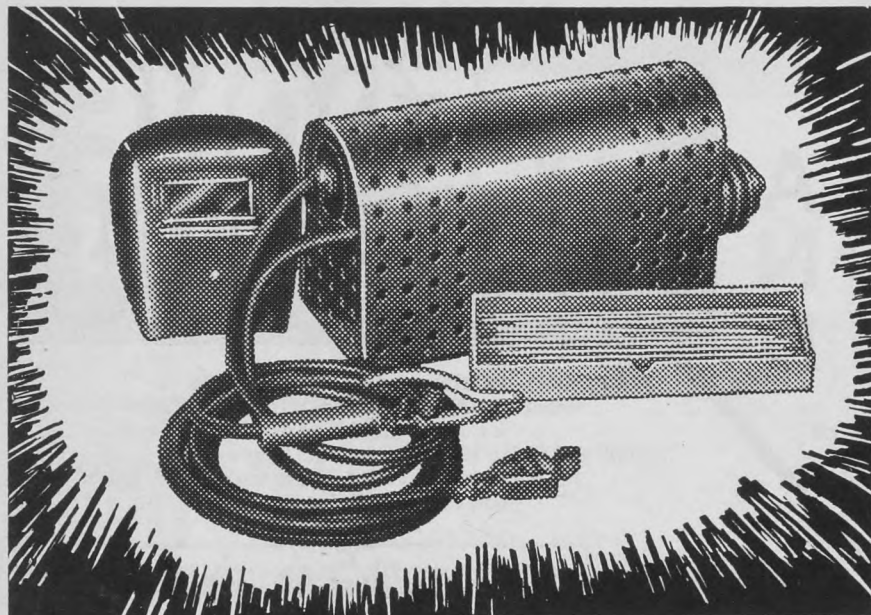


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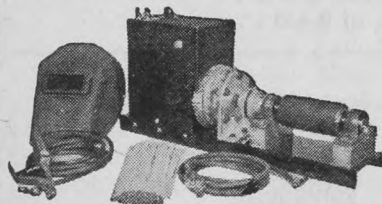
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Father's hobby is Arabian horses; son Clarence likes field crop production. Together they make a good team

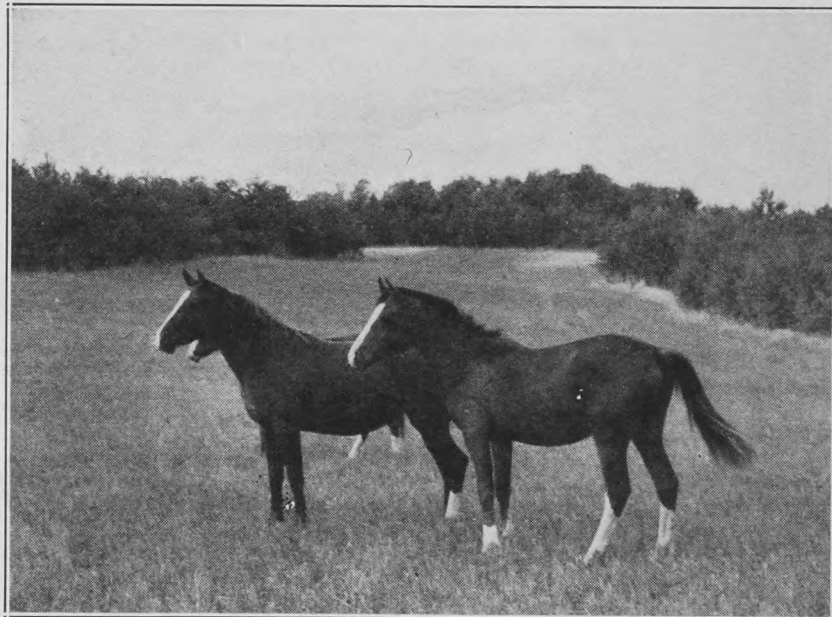
GEORGE IVERSON and his son Clarence have a happy division of interests on the family farm at Prince, Sask. It is a sort of "Jack Spratt" proposition, except that the difference in taste is not between fat and lean, but between livestock and field crops. Mr. Iverson likes the stock, Clarence likes the field crops; each is more or less supreme in his own field, and there is no conflict of interest.

I suppose it was the fact that Mr. Iverson breeds Arabian horses that first interested me in the farm. I found that he had bought a yearling Arabian stallion in 1944 from Watts Smythe, who owns the Cross U Bar ranch in Wyoming. The Canadian registration number of this animal was seven, which indicates that there were very few horses of the breed in Canada at that time. The fall of the same year he bought two two-year-old

George Iverson has had cattle on the farm ever since he took up land under the Soldier Settlement Board in 1921. He started with a mixed commercial herd, but in 1929 bought a purebred Angus bull and some purebred heifers of the same breed and began to improve the herd. Not long after he was well started, contagious abortion ravaged the herd and everything had to go.

In 1936 he bought five females and a bull, all purebred, from Stanley Beatty, Kinistino, Sask., and was back in the cattle business. Since then he has bought three more purebred heifers, and has built this small beginning into a herd of 70 purebreds.

IN the early '30's while the beef herd was still small, Iverson bought some sheep. In 1939 he bought a considerable number from Bill Martin, Maple Creek, Sask. Before long he had built up a band of 300 ewes.



A few of George Iverson's Arabian fillies.

[Guide photo]

Arabian mares from Albert Harris of Chicago, who happens, incidentally, to be the oldest living breeder of Arabians. In the fall of 1948 Iverson bought another stallion to breed some of his fillies.

At the time of my visit he had five mares and two stallions on hand, and, since he began breeding, had sold three mares and two stallions. He hopes to get five colts this spring, and if he does, some will be sold. He has no intention of going much over five mares.

Iverson has been selling weanling fillies for around the \$400 mark, and stallions for about \$250. He recognizes he is not going to make much money selling Arabians at about the price of a good steer, but he likes the breed and he enjoys breeding them, and he feels that he should be allowed to enjoy his hobby.

There is a romantic aura and some misconception about Arabian horses. They are smaller than is generally believed, running around 950 to the 1,000-pound mark. The color is usually bay, chestnut or grey. The breed is spirited, yet very gentle, and the reason most riders like them is their excellent handling quality and responsiveness.

The Arabian horses are not the only good livestock on the place.

"One thing that I found, when I had sheep, was that alfalfa can kill them awful fast," said Mr. Iverson. "We drove a flock over a half mile of lush, second-growth alfalfa on a damp morning, and though they were on it for no more than 20 minutes, about ten head were dead when we came out after lunch."

It wasn't this loss that put the Iversons out of the sheep business, though. Four things combined to do that, and these are particularly interesting, because they are so general in their adverse effect on our sheep population. The four things are the depredations of coyotes, the difficulty of getting efficient and competent sheep herders, the perpetual fencing problem, and the fact that he would rather raise more cattle and less sheep. There are no sheep on the Iverson farm today.

There is low-lying land on the farm and this has been turned to profit. It is worked into oats as soon as it dries up and, if the year is dry, a good crop is threshed. If it is wet a lot of green feed is produced. In 1948 about 50 acres were flooded and even the edges could not be touched until mid-June. The Iversons kept seeding as much as they could, every two weeks until early August. The last section seeded pro-

duced good pasture; the middle portions developed a great deal of green feed; and the first seedlings yielded a good crop of threshed grain.

The Iversons appear to thoroughly enjoy farming. Father and son possess complementary interests and there is no problem in giving each a field of responsibility. Mrs. Iverson I did not

meet because at the time of my visit she was away as Saskatchewan delegate to the Sixth Triennial Conference of the Associated Country Women of the World, in Denmark. Her husband and son seemed even to enjoy batching, and I can personally vouch for the fact that Mr. Iverson can turn out a good meal!—R.O.H.

The Arnold Legacy

Continued from page 9

them together in the right order.

On the five-by-twenty strip of paper he had a bird's-eye view of the whole territory.

The map all over was thickly sprinkled with the sign dots. But half a mile back from the lake, and paralleling its shore, ran a narrow path where the black dots were markedly heavier. The strip was too clear-cut and decisive to be the work of chance.

Jim lighted a cigarette, and eyed the path of the black dots meditatively.

"Gosh, Wayne, looks like there might be something to that pelton idea of yours!"

Wayne pointed his rifle-barrel to a spot four miles below their camp. The black dots there were heaviest of all, nearly fifty to the square inch; and another path of them crossed the main one there at right angles.

"We'll cooley down and have a look-see at that place, Jim. It got me interested while I was mapping it."

They slept a couple of hours, gathered their digging tools, and canoed down the lake. The spot which Wayne had in mind was seven hundred yards inland, up a gentle, heavily wooded slope.

Within a bowshot a dozen Englemann spruces were blasted by lightning. A giant pine standing just above the spot had been completely shattered by the bolts.

"That tree proves that lightning does strike twice in the same place," Jim observed. "And if we find iron down below here, I'll believe the theory that, other things being equal, a lightning path follows an iron-vein."

THEY sunk a hole through a foot of woods humus, three feet of glacial loess and a foot of soft shale down to the hard rock beneath. They knocked out a sample of this, to determine what formation it belonged to. Then they trooped a few hundred yards south to a canyon, along whose walls they could read the story of what lay under that first rock stratum.

They found the stratum to be 12 feet thick. The formation they sought, which sometimes carried the precious vein of gold ore, lay just beneath it.

All the signs were right; all pointing at that one innocent-looking spot. But Wayne snubbed his soaring hopes, and tried to keep Jim's excitement within bounds.

"We'll move the camp down here," he directed. "I'll do that while you hyak down to Valleria and fetch up the dynamite and drill."

The next morning at daybreak Jim came back to the new camp with a hand drill, a box of dynamite and some news.

"There's something wrong down at the old mine, Wayne. Only one battery's been running for the last five days. The drillers are working only the left tunnel."

"Maybe the crew is sore about the wage cut."

"No. Most of 'em are tied there, as Tregor said. They'll have to take what he gives 'em. It's something else."

"It's none of our concern, whatever the trouble is," Wayne rejoined.

"And another thing," Jim added. "A canoe followed me up the lake—stayed about three miles behind. I thought several times that it was dodging in and out of the bays, keeping out of my sight."

"You must be needing sleep, son! Before anyone steals our gold mine, we'll have to find it. Better tie into this breakfast and sleep a cord or two, so you can lean heavy on the drill. While you're doing that, I'll go up and clean off some topsoil."

At noon he went down, awakened Jim, and they took the dynamite and drill up to the digging. The light rotary Shamm sank very slowly in the hard diabase. By night they had put down seven holes, spooned them out, and were ready to plant the charges.

The first blast the next morning took them down eight feet. Their second, late that afternoon, took them down to the formation they sought.

Before the dirt and powdered rock had fallen, they were in the hole, digging away the debris. Wayne suddenly picked up a reddish fragment, broken loose from the bottom. He clambered out of the pit to a ray of sunlight and studied the specimen.

"Gold!" Dorval sputtered excitedly. "Maybe. Maybe silver too. It looks like the ore down at the old rock quarry. But how rich? That's the question. Before we cut any claim-stakes, we'll find out if this vein has any size to it, and then assay the stuff."

At different places along the slope they sank four other holes to determine the extent and thickness of the vein.

Jim summed up the results in his impulsive way:

"Ble'e me, if she assays worth a whoop, Wayne, she'll be one of the richest finds between the Cariboo and the Porcupine!"

Wayne laid his plans as they walked back to camp with a tump-pack of specimens.

"You go down, Jim, and bring up the assay outfit. I'll stay here and keep an eye on things. We've got no juice up here, so you'll have to sneak an ox' torch out of the mine to heat the crucible. Nils Andersen will let you have it, and won't spread any word. Go in and out as quietly as you can. If you leave right now, you can get there and away during the dark. There's some stray characters hanging around Valleria that I don't cotton to. Watch your step."

When Jim's canoe had disappeared down the lake, Wayne fished for a short while, then sauntered up to the diggings. He had warned Jim, not because he really suspected anything was wrong, but merely to guard against the one possibility in a thousand. But at the pit below the blasted pine he ran across a token that made him throw his rifle into his hand and

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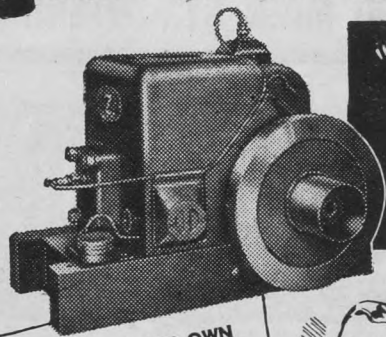


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glance around sharply in the shadowy woods.

In the fresh loam at the pit edge there was a man's track—a narrow, pointed-toe dress shoe.

He and Jim were wearing blunt, heavy brogans!

It might have been that somebody merely happened by and looked into the freshly dug hole out of curiosity. But any well-intentioned stranger would certainly have come on down to the camp and passed a word; the top of the tent was plainly visible. A dress-shoe in that solitude, 30 miles from a cinder walk, was enough in itself to arouse suspicion.

His thought flashed to Tregor. He put his own foot beside the track and measured. The track was much too small.

ONE thing was dead sure. Somebody was hanging around there in the woods spying upon the diggings—some bush sneak with no friendly purpose, watching to see if they had struck something rich. Perhaps one of the pencil-and-hatchet artists idling around Valleria had wondered where the superintendent and his tunnel-master had vanished to, and had followed Jim up the lake at his first trip.

It was a queer feeling—to know that out in the bush eyes were upon him, and that a rifle could cut him down at any moment.

Strolling away casually as if he had seen nothing, he went down to camp. While he waited that afternoon, he wrote out claim-notices and signed them for James Dorval and himself. The afternoon wore away. At dark he slipped out through the back of the tent, crawled over to the moss to a windfall log, and lay behind it, listening for prowlers. He heard nothing but the better-go-rounds, the loons out on the lake, a big cat screaming up the gorge, and a porcupine gnawing his nocturnal meal from a nearby ash. At grey dawn he fell asleep for a couple of hours.

Jim was back the next mid-afternoon, his canoe drawing heavy under the weight of the assaying apparatus. Wayne met him as he pushed through the flags.

"I've got some bad news, son," he said in a cautious voice.

"So have I!" Jim countered.

Before they unloaded the canoe they sat down on the bank and lighted their pipes.

"I got down there a little after dark," Jim began. "The Chink fixed me a bite to eat, and I went over to Andersen's house. Nobody else saw me. Nils said, 'Hell, yaas,' when I asked him about borrowing the torch. We went up to the tool house and got the thing." While they were up there, he says to me:

"Yimmy, dey's somet'ing wrong about dis mine. We air workin' only de left tunnel, and only half-time on dat. I went down to de office de other evenin' to ask for a new set of drill-bits, an' I hearit Tregor cussin' to himself like a mule-whacker. I t'ink dey's somet'ing rotten in dat shaft. We rock-hogs don't know w'ot."

"I took a lamp, Wayne, and went into the shaft for a look-see. In the center and right tunnels the last two blasts hadn't been removed. It was plain old diabase. I crawled over it and looked at the walls. You could see the fault line, where she pushed up, as plain as your nose. Hell knows

where the lode is on the other side of that diabase thrust. It might be five hundred feet lower, or a mile back in the hills.

"I figured that the thrust was what made the vein get thicker these last couple months. It sort of doubled the vein back and widened it, like you blunt the end of an iron bar. There's maybe a few hundred tons of ore yet in that left tunnel, and a little clean-up back along the shaft. When that's done, old Polonius' gold mine won't be anything but a hole in the ground."



Retired Miner.

WHEN Jim finished, Wayne sat thinking. He was out of the mine now; the news made little difference with him. He felt sorry for Nancy Arnold, but most of his sympathy went to the men who would be thrown out of work. Many of them hadn't a penny ahead. Those who couldn't move away would be in hard lines that coming winter.

The thought struck him that he and Jim would need the whole crew at the new mine if the assay showed rich ore.

He knocked the ashes out of his pipe and glanced around. "My news is short and sweet, Jim. We're being watched."

Jim sprang to his feet.

"What! How d'you know?"

"Don't yell. Sit down and act natural. I found a track up at the pit yesterday. The canoe that followed you up from Valleria the last time was shadowing you, after all."

"What's our next move, then?"

"We'll go right on with the assaying. I figure they're not going to get rid of us till they know for sure we've struck something rich. Otherwise they'd have bumped us off already."

"We'll make our test tonight. Whatever it shows, we'll act like it's a dud. Then, if we've got a gold vein out that slope, we'll crawl up and stake it tonight, slip away in the canoe and be at the land office tomorrow morning. We'd better get to work now."

They carried the torch and tank, the scales, the box of chemicals, the flux material, the crucible and its muffle housing up to the tent. To eliminate any chance of a serious mistake, Wayne decided that each of them would run a separate test and compare results. Jim started his work first.

He weighed out half an "assay ton" of the ore—a mere handful—powdered it, and mixed it in a clay dish with test lead to alloy the gold and silver—

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if there were any. Over the hot torch the slag flowed to the sides of the dish; the "eye" formed in the middle and disappeared when the muffle was opened. He poured the liquid mass into a mold. When it was removed and hammered, the slag broke away like brittle glass, leaving a "button" of the alloy.

With the poor equipment he had to work slowly and carefully. It took him an hour and a half to get the alloy button.

When he finished that and before he started the final process, Wayne began his test, for only one of them could work at once. By the time he was hammering out the alloy from the slag, twilight was settling down.

"Take it slow, partner," he warned, as Jim began the cupeling process. "We want it to be dark when we finish this work."

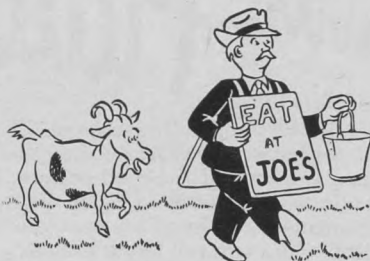
IN another hour Jim straightened up from the scales. With a gesture of disgust he flung the contents of the pan into the bush.

"Hell, Wayne," he called across the fire. "A mine of that ore wouldn't pay for the roofing timber!"

Wayne looked at him sharply. Could Jim, his excitable, impulsive partner, be playing a game as cool as that, when the difference was a fortune or a hole in the ground? If he was, he was playing it so well that his own partner ten feet away could detect nothing but disgust and disappointment.

"You might have made a mistake, son. I'll see what luck I have."

He ran his test through to the end, while Jim sat on a log and smoked.



Retired Sandwich man.

Long before he finished, he saw what the result would be. Despite himself his hands trembled as he lowered the agate beam of the scales and saw the pointer creep across the notches.

But he straightened up as Jim had done, flung pan and all into the bush and kicked over the crucible with a disgusted oath.

As he sat down on the log and filled a pipe, he exchanged a side-long glance with his partner. In a sharp whisper Jim was saying:

"I've heard of a pot of gold at the end of a rainbow, Wayne. But that's tame compared to us. We've found a pot of gold and silver at the business end of a thunderbolt!"

WHILE they smoked their pipes out, a mass of clouds reared up from behind the mountain range west of the lake, and hid the half-moon as they came on across the sky. The

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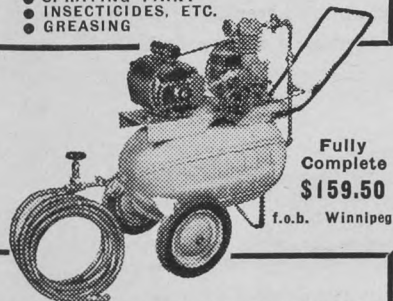
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wind freshened; a few great drops of rain fell.

"Just what we need tonight, Jim," Wayne remarked in a whisper. Then aloud: "No use to sit here and mope about it. Let's go to bed and sleep it off."

Inside the tent they held a whispered conference and laid the final plans.

"For heavens' sake, be cautious!" Wayne warned. "It means our mine and our lives to boot. When you were bending over the scales, I caught a glint like firelight on a rifle-barrel out in the bushes. I was ready to kick the fire out if you miscued."

Waiting a few minutes till the rain came down in earnest and the wind drowned any noise they would make, they crept out at the back of the tent, rifles in hand, and inched away toward the slope. At its foot they rose and crept on up to the pit.

They dared not risk time or the noise of cutting stakes; these could be seen and pulled up, anyway. Wayne plucked off some birch paper from a tree. In that they wrapped the notices, lifted up the velvety carpeting of moss at three different places, and hid the notices where they were safe.

In the woods around them the lightning struck shivering close. They kept away from the deadened pine and ducked into the bushes when the



Retired Plumber.

woods were lit up by the flashes. The lightning, running in advance of the storm, passed on southeast in a few moments; the bolts no longer ripped the sky overhead.

They crept down the slope again; and lying behind the windfall log, they watched their camp. Wayne had no intention of going back there; but up at the pit Jim had hinted that possibly he was manufacturing a big

scare out of a shoe-track and a glint in the darkness.

A leafy hardwood towering over the tent protected the fire from the rain. The burning logs flung a glow into the branches of the tree and lighted up the nearest bushes. Just as he was beginning to think Jim might be right, his eyes caught a movement in one of the junipers. He touched Jim and pointed.

A man's head and shoulders slowly emerged from the bush. For several long minutes he crouched there, peering through the flap-front of the tent. In the flickering shadows they could not make out his features, but they saw his swarthy complexion and noted his cautious, snakelike movements.

"An Indian or a 'breed," Wayne whispered. "He's not the bird who made that shoe-track. It's a two-man outfit at least. The play we staged must not have satisfied 'em. They're suspicious, or they wouldn't be spying on us like that. They'll find out shortly that we tricked 'em. If we don't want to settle this business with rifles, we'd better be halfway down the lake by the time they find out we're gone."

They backed away and circled to hit the lake shore three hundred yards below camp. Wading through the wind-whipped flags to the landing place, Wayne went up after the

canoe. He crawled up the bank, lifted the craft down to the water, and carried it back to Jim. They stepped in, and pushed through the flags out upon the bosom of Lac Valleria.

IN less than a hundred yards they realized that the storm which had so far been their friend was now an enemy. The wind, whipping down from the mountain range and across the open water, made it unnavigable for the canoe. It was a slim, sharp-pointed craft, built for the *skookum chuck* or forest-buried river, and not for a white-capped lake.

They were baling oftener than they were paddling. Twice in the first ten minutes a curling wave slapped against the canoe and came within an ace of foundering it.

A mile below camp a little juniper island lay five hundred yards offshore. By desperate work they made the lee of it, but their canoe was half full of water. Reluctantly Wayne turned the craft toward it.

"We'll have to wait for the lake to die down, Jim. That'll be quicker than going ashore and hitting the trail to the railroad. If we can't navigate tonight, the gentry back behind us can't either."

They landed and found a little level glade overhung by limber pine and carpeted with soft, springy moss.



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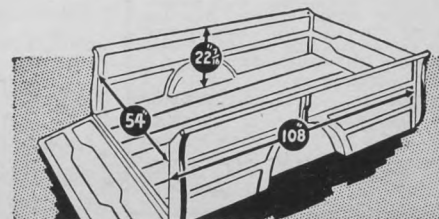
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With the canoe over their heads they waited out the rain.

A little after midnight it stopped. Toward morning the wind quieted, the weather fared off, and the lake quickly stilled.

They launched the canoe and lost no time getting away again. Wayne turned it out into the middle of the lake, beyond reach of any rifles that might take a notion to speak from the shore. Under their sturdy paddles the canoe skimmed along at a good clip. Watching behind and seeing nothing, he felt confident that they had given their enemies the slip.

The early sun already was gilding the western shore of the lake. The water had quieted down to a silvery, mirror-placid sheet, broken here and there by leaping trout. Canvas-back and cinnamon teal skittered over the surface. Fish eagles on snags along the shore *chak-chaked* to one another.

Eight miles below the camp, a headland stood out into the lake. As they danced down toward it, sheering off a little to keep away from its point, Wayne saw Jim suddenly stiffen, his paddle upraised for a stroke. He looked ahead.

A canoe, larger than their own, with three men in it, was darting from the point of land to *head them off*.

Jim turned around. His face was a trifle pale, but his voice was steady enough:

"There's our friends, Wayne, blocking the road. They've got one rifle on us. What's the call?"

Wayne looked at the enemy canoe for a moment, thinking swiftly.

"We could get ashore, I guess. But I'd rather meet an Indian or a 'breed on open water like this than in the

woods. We'll stay out here and settle the dispute. It's been drifting toward a rifle argument for the last three days.

"Put down your paddle, Jim; I'll do the maneuvering. That .300 of yours is good at long range. I'll keep us back away from them and give you a chance."

The two craft glided within a long rifle-shot of each other. A gun barked; a bullet whistled over Wayne's head. He crouched lower, steadying the canoe with the paddle so that his partner could sight.

IN the prow of the boat Jim was kneeling with his rifle leveled. He took a slow, deliberate aim and pulled.

The three men ducked down in their craft. Jim's bullet must have grazed the man he aimed at, for it struck the water a scant hundred yards beyond.

"Don't aim at the men!" Wayne bade him. "It's chance at that distance and they've got three chances to your one. We've got to sink their boat at long range. Shoot low. If you strike the water this side of 'em, the bullets will glance on through their canoe."

The three men, seeing that Wayne was holding his craft, stopped theirs. They fired all three at once. One bullet clipped through the canoe, luckily up at the gunwale. Another sang past Wayne's ear.

Jim answered with the four shots in his magazine, as fast as he could work the bolt. Two bullets glanced off the water and tore through the canoe, high up. A third was a clean miss. The fourth hit the canoe squarely at the wind-water line.



Retired Fireman.

The man nearest the hole lunged forward and put his hand over it. The man in the middle slashed off a square of canvas and passed it to him.

"Twice more like that one, Jim, and they'll be swimming like muskrats in these twelve feet of water," Wayne encouraged him. "Give it to 'em while they're broadside on."

Jim clipped in five cartridges and raised the rifle. Before he could shoot, the three men fired again. The paddle in Wayne's hand was knocked out of his grasp. A bullet sprayed Jim with water and tore through the canoe at his feet. He emptied his magazine at the enemy. One bullet at the wind-water line again—ripping a hole as big as a fist. The others were through the boat, but high.

Wayne reached forward for the other paddle and backed the canoe off as Jim reloaded. The three men, guessing where he was aiming, whirled their craft and presented only its narrow prow. When they had mended the boat again, it began creeping forward to force the battle.

Small as the prow of the canoe was, Jim hit it twice low down with his next five shots. Wayne kept backing away. His partner plainly could outshoot them. A few more exchanges like that and they would be swimming.

They must have realized that they stood a poor chance at that range. In spite of all that Wayne could do, they closed up. They were not shooting now; they made no effort to patch their boat. They meant to finish the argument first.

TWICE Jim emptied his magazine at them as they glided nearer across the water. At the sharp crack of his rifle the three men ducked low. With the boat unsteady beneath them, his aim was poor. His bullets whizzed over or struck to one side of them. The enemy did not answer. Steadily their canoe cut down the intervening space.

Wayne dropped his paddle and caught up his own heavy rifle. He steadied the canoe with a hand on the gunwale, and bade Jim hold his fire. Lying full length in the bottom of the boat, resting rifles on their palms, they waited.

At four hundred yards the men in the other boat quit paddling. Their momentum kept them gliding gently closer. Their craft swerved slightly,



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2. "O.K.," I said, "but why do Super Sure-Grips slip less?"

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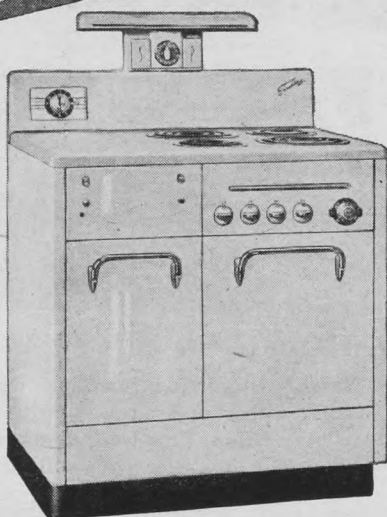
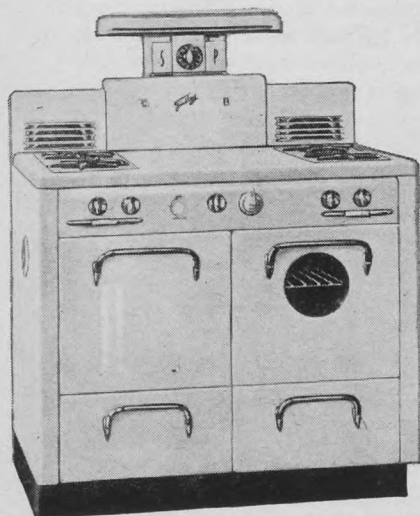
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touched by a whisper of breeze. An arm over the side attempted to point it straight again, but failed. At three hundred yards it had turned to a half-broadside. Wayne cocked his rifle.

"Now!"

At the same instant his gun and Dorval's cracked. He saw puffs of smoke from the other boat. His hat was knocked off his head into the water. He was blinded for a moment with spray that a slug kicked up. He clipped in a fresh magazine and poured a stream of bullets at the boat, shooting as fast as he could crook trigger-finger.

One way or another, in ten seconds, the arbitrament of rifles would be settled.

One of the three men in the other canoe leaped up and fell limply across the gunwale. Jim's rifle was hit, as he reloaded, and its bolt action shattered. He flung it down and whipped out his belt-gun—useless at that distance. Against two rifles Wayne was shooting desperately, aiming point-blank at the boat, not daring to take better aim.

As he poured another magazine of bullets at the enemy canoe, he saw its side cave suddenly in, as if the middle rib had been smashed. It rocked a moment. He heard a yell as it filled and capsized, throwing its occupants into the water.

He brushed a hand across his eyes and watched. Only one man came up. He trod water for a bewildered moment, saw the canoe and his two foes, and started swimming for the point of the headland.

His strokes were slow and labored. He never would make it.

The hole at Jim's feet was shooting water into the canoe; it was flooded a couple of inches already, and threatening to sink. Wrapping a cartridge in his handkerchief, Jim plugged the hole as best as he could.

With his eyes on the swimmer struggling desperately, Wayne caught up his paddle and whirled the canoe around. Jim looked up at him.

"That's the idea?"

"That bird can't make it ashore. He'll go down in fifty yards."

"Well?"

"We'll pick him up."

"We will like hell!"

"Cool down, partner. You wouldn't like to remember watching a man drown. We want to find out the who and why of this affair, besides. Maybe we haven't got all of them."

IN spite of Jim's angry objection, he drove the canoe toward the swimmer.

Before they could reach him the man went down.

With a powerful back-stroke, Wayne stopped the canoe and hovered over the spot, peering into the blue water. Against the clean sand bottom he made out the blurred form of the man, fighting desperately to rise again, his water-soaked clothes dragging him down.

Twice he kicked up within a few feet of the paddle thrust at him, but in his wild thrashing missed and sank again. Wayne could see him pawing frantically at the sand bottom.

The sight was more than Wayne could endure. He kicked off his shoes, stripped off his coat and dived overboard.

When he came up again, with a hand twisted in the coat collar of a

limp form, Jim was in the stern ready to help. He grasped his partner's hand, and guided it to a clutch on the gunwale.

"Don't try to board!" he ordered, grabbing up the paddle. "We'd capsize sure. I'll tow you both ashore."

A ten-minute battle, and the water-logged canoe touched the point of the headland. Wayne dragged his man out of the water, spread-eagled him, and dropped down to work him back to consciousness.

"Good Lord, Jim," he burst out at sight of the man's face. "It's Frank Hyacinthe!"

The office manager was sitting up in a few moments, but dazed and



Retired Park Board employee.

groggy still. He looked around him at the lake, the tongue of land, the upturned canoe. Then his eyes fell on Wayne, wringing the water from his clothes. He realized where he was and what had happened.

His eyes could not meet Wayne's. The red flush of shame spread over his pinched, blue face. His head bowed. He did not once look up again.

"I would, you dirty skunk!" Jim rasped at him.

WAYNE put on his clothes and sat down in front of his former office manager. Never in all his life had he seen a man so stricken with shame.

"We'll talk now, Hyacinthe. Don't try to lie or be bashful with information. Who were your friends out there?"

Hyacinthe did not take his eyes off the ground, but he answered readily enough:

"They were two Blackfeet 'breeds that have been hanging around Val-leria."

"Real nice company for you to be loping the bush with! Wasn't it your shoe-track I saw up at our test hole—a small pointed shoe?"

"Yes."

"How did you and your friends happen to slide out from this headland and cut us off? We thought we'd given you the slip."

"One of the 'breeds looked in your tent last night. You two were not there. I guessed you outwitted me. Then we found your canoe was gone. I guessed you'd have to go ashore in that wind. We carried our boat down the trail and waited."

"Sounds like you were the brains of this bush-sneak party. The 'breeds did

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the spying and you sorta managed them. Is that right?"

"It's—true."

"Did we get all your gang? Any more hanging around in the bush up there?"

"No, the two 'breeds was all."

"How did you know where we were in the first place?"

"I'd heard you and Dorval talking about that vein maybe cropping out again up the east range. The Chink told me you'd gone away in a canoe. When Dorval came back for the dynamite and drill, I had the 'breeds follow him and spot your camp."

"All right. We've got the surface facts; now we'll dig a little deeper. I had my eyes opened to you down in the office several weeks ago when you switched affections to Tregor. I can understand your wanting to own a nice rich discovery claim that some one else discovered—wanting it so bad you were willing to shoot two men you'd worked with for several years."

"But what I can't understand is this: You never struck me as being a self-starter, Hyacinthe. You always seemed to drift with the main breeze. All right for office work, handling a pencil; but no good where initiative was needed. To find you up here managing a *coup* like this, handling a rifle—it's got me suspicious. Open up!"

"We planned it together. I arranged most of the details, because he is a *chechahco* in the bush. We were to go fifty-fifty . . ."

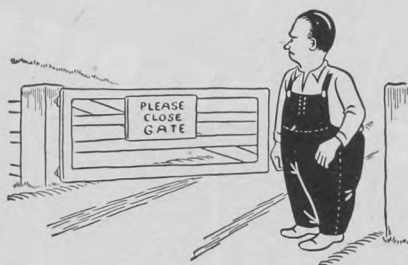
"We?"

"Yes—Tregor and me."

JIM sprang up from the canoe as if he had been prodded. Wayne merely grinned.

"Sit down, son," he bade Dorval. "This is just getting interesting. It was worth diving into the river for. Tregor was playing pretty heavy stakes, wasn't he, Hyacinthe?"

"He had to do something. The mine . . ."



Retired Railwayman.

"We know all about the mine playing out. Go right on. He was up a stump and had to rob somebody, but why did he pick on Jim and me in particular?"

"He knew you two are experts. He heard the rumors about this vein up the east range. He knew you'd find it if anybody could. He didn't have any particular love for you, and besides . . ."



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"Besides what?"

"He was afraid of you."

"Afraid of me! I walked off without making any trouble, and left him have the Arnold mine."

"It wasn't that. It was Miss Arnold."

"What about her? Where does this 'afraid' come in there?"

"He was afraid you might get her, after all."

Afraid he might get her after all! Heavens and earth, didn't Tregor have her already?

"You mean he was afraid that if I struck a discovery that made me rich, she might—might change her mind?" asked Wayne.

"I don't think the possibility of a rich discovery had anything to do with his fear. It was you *personally*. I believe he didn't like the idea of your being around Valleria. To say it straight out, I believe he wanted to get rid of you for good and all."

"What makes you think that?"

"I wouldn't blame you for calling me a liar, but I hung back from—from using rifles on you and Dorval. I argued I could beat you to the land-office and get the claim. I said it would be a lot surer than a fight with you. But he insisted you should be killed. That's why we came out at you on the water, when we had an eight-mile start."

"It turns out you were correct on that count," Wayne observed dryly. "So he insisted on bumping me off! I don't understand him there. After the proof she gave him of her choice, did he still think I might beat him?"

"I guess—he must have."

"Why?"

"I don't know what their relations were—I mean how sure he was of her. I'm only guessing. He asked me about those two years when you and Miss Arnold were together. I told him I thought she liked you and was, I think I said, *engaged* to you before her father's death."

"Aren't they planning to get married?"

"Yes, it is set for next week."

"He should have left well-enough alone," Wayne commented. "He hadn't—and hasn't—any grounds to be afraid of me. Is that all you know now about this whole transaction?"

"It's all I know."

WAYNE got up and stepped a few yards aside with Dorval.

"The question is, Jim, what're we going to do with Hyacinthe?"

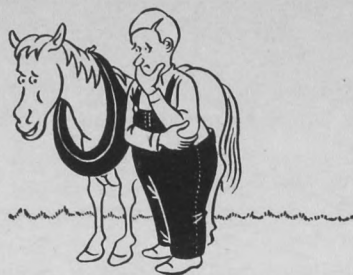
"Turn him over to Corporal Clark!"

"But see here: Ten chances to one, the real skunk didn't commit himself in this affair. There's no material evidence against him; you can bank on his seeing to that. We've got the stuff on Hyacinthe, his tool, but nothing on Tregor. He'd probably succeed in lying completely out of it. Hyacinthe would have to pay for him."

"He deserves to. Let him. Let him get soaked hard."

Wayne thought a moment. His partner usually listened to reason, but he was mad all through now.

"Jim, suppose you had spied on a man, tried to murder him, and got licked. Suppose he pulled you out of the water, chewed the rag for a few minutes, and then *let you go*. What would you do?"



Retired Laundryman.

"I'd go shoot myself."

"Exactly. Hyacinthe won't do that; he hasn't got your nerve. But he's got a sense of shame, just as you have. Take a look at him there. What I'm driving at, if you want to soak him, and *soak him hard*, let him go."

"But that's only a side argument. It's to our advantage not to turn him over to the Mounted. See here, we don't want to get messed up in an affair like this. Men would say, 'Uh-huh! Bad blood between them over the girl! That claim-snatching is just Dorval's and Wayne's version! I'm not anxious to have my name connected with a shooting-party. Better just keep it quiet. We can do that."

Nobody but the Devil will ever miss these two 'breeds, and he'll know right where they are."

Jim scowled at Hyacinthe a little while before he answered:

"I guess you're right, Wayne. A shooting affair always reflects on both parties to it, but there's one thing—Nancy ought to be told about Tregor. You naturally can't, but I will. I don't mean she might swing back to you if she knew about him. For her own sake . . ." He broke off abruptly. "Hell, I can't keep from liking her, Wayne, in spite of everything! I'd hate to think of her marrying a *carcajou* like him."

Wayne tried to think of her impersonally, as he would think of any other girl. Tregor would probably walk the straight and narrow after this sharp lesson. If she loved him, she would be happy with him anyway. They would go back to the East together. The whole sorry affair would be smoothed out.

"It works both ways, Jim" he said presently. "In my case, she was a grown woman, making her own choice. In this case she has to be too. She had a couple years to judge me, and a couple to judge Tregor. She made her choice when she signed that wage-cut."

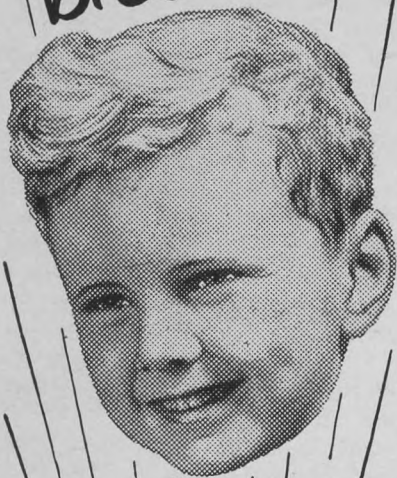
"But I won't be unjust. I'll do for her what I'd do for any girl. We've got to protect her as much as we can. When you go down, go and see Tregor. Tell him we're hep to his whole trick. Throw a scare into him. Tell him we're going to keep an eye on him, and if he doesn't toe the line



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from now on, we'll dig up old bones."

"It's your concern," Jim agreed reluctantly. "If that's how you feel about it, I'll tell her nothing."

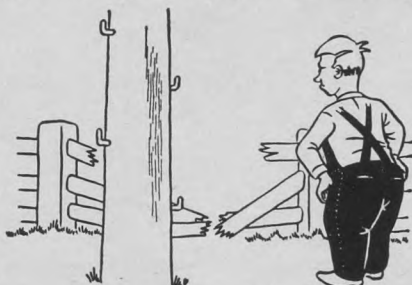
At the beginning of twilight that evening Wayne was in camp watching through a screen of spruce boughs for his partner's return. Taking Hyacinthe along, Jim had gone down to register the claim, bring up grub supplies and get surveying instruments.

With two rifles and two paddles no longer needed, Wayne had walked back up the shore trail to keep an eye on the discovery and do some of the preliminary work before the inevitable rush of prospectors and speculators.

During the day he had roughly staked out plots of the level shore terrace for the mill site and the homes of the workmen. Already he had formed plans of dredging a channel into the lake bank so that a barge could bring up machinery and other things from the railroad. Up the lake half a mile, away from the bustle and noise of the stamps, he had staked a little glade where he thought Jim would want to build his home and Eleanor's.

With one exception, the whole outlook was roseate. That one exception Wayne would not admit to himself, though all the other things were trivial in comparison with it.

While he was staking Jim's home in the glade, he had tried to whistle unconcernedly, but could not. The challenge to his energy that lay ahead of him in erecting the mill, the pleasure of having his old crew back with him again, the pride of owning



Retired Policeman.

his own mine, the certainty of splitting a fortune with Jim Dorval—all of it left him strangely cold . . .

Down the lake the canoe came in sight. Three hundred yards away, Jim shouted and waved a paper, in token that the claim was theirs. Wayne met him and carried the instruments to the tent.

"Did you see Tregor?"

"I did that. I looked him in the eye for ten minutes. He promised everything. I think you sized him up right, Wayne. He was in a desperate pinch. He saw a chance to get a mine and be rid of you at one crack. It's his first misstep; he may toe the line from now on. But—there's a canoe coming up the lake."

"More bush-sneaks?"

"No. It's—Nancy."

Wayne dropped the instrument he was adjusting. "Did you tell her?"

"I did not. I didn't even see her while I was there."

"Then what's she coming for?"

"How do I know?"

In a few minutes more the second canoe came slipping up the shore along the flags. Attistah, the Beaver guide, was paddling it, kneeling Indian-fashion in the stern. In the twilight Wayne made out a girlish figure sitting in the middle.

"If you don't want to go through with it, partner," Jim ventured, "I'll stay here and meet her."

"I'd rather she hadn't come," Wayne answered quietly. "But sometime or other I'd meet her and have to go through with it. It had better be now."

JIM walked aside as the canoe slipped in through the flags and touched the bank. Attistah stayed in it. Nancy came up alone to the tent.

She was dressed in the woods clothes she had worn that day he cut the birch-marl ring for her. It struck Wayne oddly. At first, in his bitterness, he wondered why. A deliberate attempt to bring back the two sunlit years, to appear to him as she had been there, to gain whatever she had come for.

Then he realized that on the long canoe-trip she had honestly needed them.

She stopped a few feet from him, leaning against the moss-clad trunk of the hardwood. She was breathing quickly; he could see the tie throbbing up and down on her breast. He steeled himself against a maddening impulse to go up and take her in his arms. He had fought out that battle weeks ago.

For several moments she did not speak. It seemed to him she was leaning against the massive trunk for support and strength. They were looking into each other's eyes. There was no dissembling, no studied poise in her words or mien now. In the swift tense scene between them, all pretense and evasion dropped.

"I've heard about my worthless mine, Stephen Wayne."

"I'm sorry. I expected the end to come any time."

"I know what you did there those four years. I know all the—the sacrifices. I heard about the offers you turned down at other places. When you weren't even taking a salary for yourself, I was writing letters about—about the money you sent to me. I remember one; it was criminal."

"Don't be unjust to yourself, Miss Arnold. You didn't know."

"Why didn't you tell me?"

"I didn't want to put you under obligations."

"But why did you sacrifice yourself and waste all those years?"

"You might guess why."

"But will you tell me why—from your own lips?"

Why was she wanting to be told something that she had known for six years?

"If you had come back alone," he said frankly, "I would have been repaid a thousand times. That's why."

Her cheeks flushed. She looked away from him while she spoke:

"I suppose—it is too late—to repay you—now."



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He did not answer her last words. She took a step forward, looked up at him. For a moment her eyes clung desperately to his.

She turned away from him, as if to leave, but checked herself. Her voice was low and spiritless when she spoke again:

"I heard about your discovery here, Stephen. I thanked God for it. You went on with your work and forgot me, as you should have done, instead of yielding to any—any weakness. It seemed you came into your own the moment you broke away from that mine—and all its influence. It seems my father was your enemy in all he did. Won't you take the machinery from my mine and use it here? It's a poor payment, but it's all I've got."

"Yes, it's all you've got. That's why I can't take it, Miss Arnold. Tregor can dispose of . . ."

"I heard about Tregor, too. You would have kept me in ignorance about him trying to kill you and Jim."

"Who told you all these things?"

"Frank Hyacinthe. He came to me down there after Jim released him. He told me the story of those four years—and all about his dealings with Tregor."

"Why?"

"It was from gratitude to you, Stephen. He said he would give everything he had on earth to be back working for you. He knew I'd never let Tregor see me again. He thought

I'd come up here to you when I knew the truth. He didn't suspect that you no longer—wanted—wanted . . ."

"What made Tregor so anxious to kill me, Miss Arnold? When you sided with him in that wage-cut . . ."

"I was led to sign it. He knew that."

"Led? You were free . . ."

She made a gesture of dissent.

"I've been led all my life!" she interrupted bitterly. "You treated me just as my father did, Stephen. You kept me in ignorance, and continued to rule my choice of this and that. I hardly had a mind of my own. Tregor, like you and my father, laid a sheet of paper in front of me and told me to sign. I knew what it meant, but I wasn't free."

"I wasn't free—not till I started up here to see you and ask to pay you. That was the first free thing I've done in all my life."

THE blood was hammering madly through Wayne's head. The first free thing—did it mean she came not from a sense of duty, of her deep obligation to him, but because she loved him?

He went up to her and laid his hand on her arm.

"Nancy, look at me. You'll tell me the God's truth. There is only one question between us now. When you came here with Tregor, before you found out what I'd done these four years, were you engaged to him?"

He could see the word, "No," flash-



Retired Barber.

ioning itself upon her lips. She tried to utter it but could not. He knew from her eyes it would have been a lie. His hope died. His hand dropped from her arm.

She turned away from him and went blindly down toward the canoe. Wayne did not follow. He stood watching, silent. He thought that once she stopped and looked back at him, but in the evening gloom of the junipers, he could not be sure. She reached the canoe, crouched down in

it; the Indian skirled it out upon the lake.

In the deepening twilight it faded out of his sight while he still could hear the swish of the paddle. When that too had gone, he leaned against the mossy hardwood, staring at nothing save the bleak years ahead.

He knew now the battle with himself, the battle to forget her, had never been won. He had been deluding himself. He could not forget, could never put her out of his life. The mere sight of her had roused all the old fierce longing which he thought he had put down. Her presence was like a subtle perfume; against it resolve and steeled will were powerless.

Jim stepped back into camp. For a silent moment or two he looked at the grey, drawn face of his partner.

"I couldn't help hearing part of it, Wayne," he spoke up. "I wonder if you did the right thing?"

"She came back engaged to Tregor," Wayne said dully. "You can't get around that. She admitted it."

"But wait a minute. I think I see this whole thing now; I didn't see it before she came, or I'd have spoken up then. I want to remind you of something. You told me several times that her father's influence was the most powerful thing in her life. That's what she was driving at a minute ago when she said she'd been led to do this and that. She was telling the

BUCK UP with NABOB!



truth when she said that coming up here was the first free thing she'd done in all her life."

"But she came back . . ."

DORVAL stopped him. "I know what you're going to say. She came back here intending to marry Tregor. That's true. She deliberately tried to put you out of her life. That's true too. But why?"

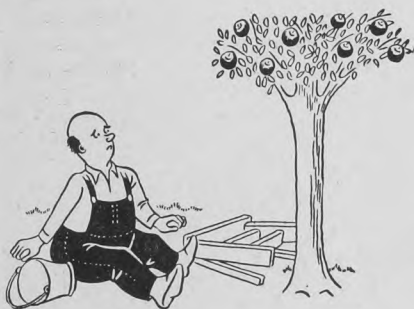
"While we were going down the lake, Hyacinthe gave me an earful. That snoop knows everything, and he was so grateful to you that he spilled all he knew."

"Old Polonius put one over on you, Wayne. He slipped you a mean one, boy. That's what she was driving at when she said he was your enemy. You think he liked you. He did, as far as the mine work went. But *no further*. He was shrewd enough to be double-faced, and you not know it."

"When he saw you and Nancy getting thick, he investigated you. I hate to say it, Wayne, but your dad and mother were against you. When old Polonius found that out! You know he had a mind harder'n Plymouth Rock, and queer notions about genteel blood. Friendship or his debt to you didn't stop him from slipping you a mean one. You weren't any husband for his daughter! Like father, like son—that's what he thundered at Nancy, and his word was law to her. In her eyes, when you didn't give in like your dad, you proved old Polonius' hereditary taint was a damned lie! Don't you realize that was what she was driving at?"

Wayne whirled upon him.

"You're lying! You want to see me marry her . . ."



Retired Grocer.

"Easy, Wayne—I'm not through yet. Here's some more: He practically arranged her marriage with Tregor. He gave her a flat order not to have anything to do with you. That was in his will. Imagine what it meant to her just after his death! You can blame her, if you want to, for obeying him—for bringing Tregor back with her, treating you cold as a sort of self-protection, forcing herself to something she shuddered at. But d'you realize, Wayne, that when she came up here and offered herself to you, she broke away from her father and defied him? Why? She couldn't tell you in three words, after you'd refused to—to be paid!"

Wayne leaned against the tree. His brain whirled giddily. In the tumult of his emotions one thing stood out very clearly: Hyacinthe the snoop had saved him from a horrible mistake—if it were not too late now.

"I didn't believe it myself, Wayne," Jim added. "I thought Hyacinthe was stringing me. I didn't believe the old *pater familias* would do you a trick as mean as that. But when I heard what she told you, that proved it. What are you going to do about it?"

Wayne turned swiftly and made for the canoe.

He sensed, rather than saw, that Jim was hurrying after him and getting into the boat.

"We can catch 'em, Wayne," he said softly, "before they pass the island."

Wayne did not answer. He was dipping his paddle blade-deep and peering ahead into the purple twilight.

WITHIN a mile they came in sight of the Indian's canoe, and overhauled it rapidly.

"It may be, Jim"—Wayne turned his head around—"it may be that Nancy and I will go down the lake together. If we do, you hurry on ahead with the Indian. I want you to catch Frank Hyacinthe. He's had his lesson. Tell him if he wants his old job back, he can have it."

"Good heavens!" Dorval gasped. "And shall I give Tregor your love?"

As they drew near, they saw Nancy still crouched down in the middle of the canoe, her head bent in her arms. As they came closer still and drew alongside, he saw that she was weeping bitterly. At the camp she had kept her self-control, but her courage had utterly broken as she started back on the lonely trip to Valleria.

Wayne took things in his own hands; they had drifted long enough.

"Get into his boat!" he ordered the Indian. "You, me, changes places. You go down lake with Dorval."

The Indian looked at Nancy. At the unexpected sound of Wayne's voice, she glanced up, startled. She turned her head away and tried to dash the tears from her eyes.

Bewildered by his order, she did not know what to say. Wayne and Attistah changed places.

"Now paddle!" Jim bade the Indian.

Their canoe vanished.

Wayne headed his craft for the island shore a hundred yards away. When it touched, he stepped out and drew it alongside a rock.

"Nancy!"

She had buried her face in her arms again. She did not look up or answer. For a moment he leaned over her, not daring to touch her. Then he stooped swiftly, picked her up in his arms, and carried her ashore to a seat on a mossy rock in the glade of limber pines.

"What we've been looking forward to for years, Nancy, is ours now—if you'll forgive me."

"But you—you refused!" she sobbed. "You didn't want to be paid!"

Wayne brushed the past aside with a single question: "Are you glad I came?"

He waited till she turned her face up to him. Her arm went around his neck in answer.

THE END.

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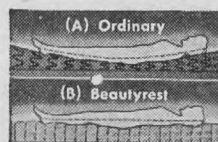
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The Countrywoman

Urge Study of FAO

RURAL women through their societies were urged to support United Nations Organization, at the Triennial Conference of the Associated Country Women of the World, at Copenhagen, last September. It was recommended that they select one or more of its special agencies for study. It was further recommended that Food and Agriculture Organization was a fitting subject for their study and support. They were asked to contact it through the national committee in their own country and to endeavor to secure representation on such committee where one has been formed.

The reports of the societies show that in the main women have devoted their study to: health, education, housing and child care and training. These subjects pursued naturally lead to questions about conditions prevailing elsewhere in the world, as Miss Margareth Hocking, a Canadian, graduate in Home Economics and now serving with the Rural Welfare Division of FAO, pointed out in an evening session devoted to Rural Welfare. She explained that FAO, founded in 1945 and holding its first meeting in Quebec city that year, has now 63 member countries, all of which have pledged themselves to strive for three primary objectives:

Raising the level of nutrition and standards of living.

Improving the production and distribution of all food and agricultural products.

Bettering the conditions of rural populations.

"The first task of the Rural Welfare Division was to determine which of these problems were being dealt with by other international agencies. In certain matters such as health, education, housing and sanitation, wages and working conditions, industrialization and general economic development, migration for rural settlement and population problems, other UN agencies such as WHO, UNESCO and ILO have major responsibility. In these fields through inter-agency conferences and councils FAO tries to act as spokesman for the interest of rural people and to ensure that they are not overlooked in the work of other international agencies."

When the rural welfare division was set up three years ago, a list of priority projects were suggested by member governments. This list included a variety of problems dealing with: rural co-operatives, land tenure, transportation and communication, housing and housing equipment, rural industries and handicrafts, social surveys, social security, extension techniques and population problems.

Possibly the terms used are so general, the application so remote that it is at first difficult to see where a beginning to a study may start. We in Canada know all too little of FAO and what it stands for. It has collected much data through surveys. It has taken action in many regions of which we should know much more than we do. It has held training schools for workers and sent scientists and helpers to: help wipe out disease among the dairy herds of Europe and so bring more meat and milk to Europeans. It has aided efforts in China to produce insecticides to combat insects which were making serious inroads on insufficient rice supplies. It has assisted along with the International Children's Emergency Fund in providing 340,000 of the neediest children and pregnant mothers with milk and proteins. Special attention was given to inadequately fed refugees in Greece, who made up about seven per cent of the population. An FAO nutritionist has trained Greek women in nutrition and help set up a nutrition education program and a national food program for Greece.

There are other programs in reforestation, replenishing of fish and the provision of better seed. A catalogue listing the publications issued by FAO is available. It may be secured as well as copies of desired publications telling the story of FAO from: Information Division, FAO, 1201 Connecticut Ave. N.W., Washington, D.C. Ryerson Press, Toronto,

A further field of study suggested for rural women's societies and two contributors' opinions offered for your April reading

by AMY J. ROE

carry some of the publications. Canadians should want to know the organization machinery, Canada's part in FAO, and Canadians who have rendered service in this field at home and abroad. They may secure information from the Canadian Federation of Agriculture, 111 Sparks St., Ottawa.

Work Is a Privilege

I HAVE never been able to understand why work should be considered a curse and a burden. It can be both, of course, but so can anything else in this world which is just beginning to learn its ABC's.

We are all familiar with the individual who shirks on the job, who doesn't finish things, who feels that anything is good enough. Such people think they are turning the fine trick of getting less bother and more fun, but they are really denying themselves one of life's greatest pleasures.

Another error made by so many is in thinking that the particular sort of work they do should have

The Long Voyage

*Not that the pines were darker there,
nor mid-May dogwood brighter there,
nor gulls more swift in summer air;
it was my own country.*

*Having its thunderclap of spring,
its long midsummer ripening,
its corn hoar-stiff at harvesting,
almost like any country.*

*Yet being mine; its face, its speech,
its hills bent low within my reach,
its river birch and upland beach
were mine, of my own country.*

*Now the dark waters at the bow
fold back, like earth against the plow;
foam brightens like the dogwood now
at home, in my own country.*

—MALCOLM COWLEY.

the most honor in the world. The man or woman who does physical labor looks down on those who use their brains exclusively—and vice versa. The artist who paints night and day for three days and then takes the rest of the week off is considered shiftless and slightly demented. The individual who actually devotes a part of each day to sitting down and thinking is considered to be "odd." Yet it is all good honest labor—if it is honestly done—and all necessary.

It is not the kind of work or even the result of it which is important: it is the doing of it well. Perhaps someone else will pick it up where we had to drop it; perhaps it can never be finished. It doesn't matter. For the time being it is ours and we can pour into it all our hopes and dreams and knowledge and skill. It is good even when we are working just for ourselves or our families, but when we are working for humanity then we know that we have been granted one of life's greatest privileges.

It doesn't matter, either, whether our particular job is large or small. If it adds one little drop to knowledge, if it raises the level of mankind by the slightest degree, if it causes one soul to say "that comforts me," then nothing can surpass it in importance. But leisure is important also and one of the most restful and refreshing ways to use it is to do

a different kind of work: writer to woodcutter, housewife to musician. Sometimes such leisure can renew us more than sleep.

The cry now is for shorter and shorter working hours. There is nothing wrong with that as long as we work just as hard as we can during whatever work day we have. Too many try to slide by with as little effort as possible, thinking only of the fun when their "labor" is over. But they are making the mistake of their lives. They will never know what fun really is until they have a good job of work behind them.

Most of us take our friends too much for granted—and so we do work, which is one of the best friends we have. If everyone were suddenly ordered to do nothing at all, even while still being provided for, we would shout to heaven about such hardship and injustice. Then if a few of us at a time were allowed to work again, we would consider those people the privileged of the world. And that is exactly what they would be.—Gilean Douglas.

Radio Listening

TO country women, winter brings little more leisure than other seasons until Christmas and New Year's celebrations have become memories, only. Then until spring there is an easing off of work and the farm housewife has time to attend to personal interests and enjoyment.

Recently I asked my partner if he had to choose between a car and a radio, which would he choose. Of course you guessed it! He said "a car." I would choose a radio. Cars have widened greatly the horizons of ordinary people. But they are also responsible for the dearth of community spirit in country districts. People are no longer limited by circumstances to make neighbors their friends. Radios bring the news and the culture of the world into rural homes and far flung outposts.

Before we owned a radio, the great masterpieces of music were unfamiliar to me. Through the years, while I have been housebound by my family duties and cares and by snowblocked winter roads, I have been enabled, by the radio, to recognize and enjoy good music and have been taught to find real pleasure in classical music. My interest in opera has developed sufficiently to want to know still more about it. I was recently given a copy of "The Great Operas," a book written by Milton Cross. Now, before I listen to a radio broadcast of an opera on a Saturday afternoon, I can read a description of the opera. Then I am able to mentally picture the scenes and characters.

Drama has always held an attraction for me. I live far from even a movie theatre. I thoroughly enjoy radio plays, be they Shakespearian, mystery, religious or even soap operas. The fine series "The Way of the Spirit," broadcast by CBC, has made Biblical incidents and characters vivid to me.

Winter road conditions, after Christmas, have served to deprive us of the opportunity to have our usual bi-monthly church services. This loss is compensated for by our having a choice of several religious services broadcast on Sunday.

We hear many phases of economics and political topics discussed over the radio. These are much better than we could possibly hear at local political meetings. One is also less likely to be biased by personalities through the broadcast speech.

I enjoy the book reviews. In Saskatchewan we have fine libraries with books free to book lovers, through government services. At a small cost of 50 cents we may secure a catalogue and choose and borrow books from the Open Shelf Library. Or we may secure the loan of a case of some 50 to 60 books of various types for a year.

Knitting is one of my favorite occupations. It combines with radio listening nicely. After the supper dishes are washed, I claim the evening as my own. Then I knit, read, write or listen to a favorite radio program. Despite radio news of wars and rumors of war, I am thankful to have been born late enough to enjoy radio and all it brings. —Mabel W. R. McPhail.



Home-Style Canning

Some observations from personal experience which may encourage other farm women whose equipment may not be modern, and some of my favorite recipes adapted to the use of canned meat

by LENA A. SEXTON

YOUR husband, a good provider, kills a pig or a steer to provide meat for the family use. Or possibly, he is a mighty hunter and comes home with a deer over his shoulder. You find yourself with a hundred or more pounds of meat to process. Only a limited amount can be cured. The problem is how to store the meat for use, especially during the warmer months of the year. This would be no problem if you could secure adequate cold storage in a frozen food locker plant. But possibly there are 107 names on the waiting list for a locker, ahead of yours.

A pressure cooker would be a second solution but not every farm woman has one. They were scarce during the war period and now with restrictions on the use of certain metals, they may be scarce in your locality. If your kitchen is not fully modern probably it is equipped with a wood or coal stove and the water used is conveyed to the house in a bucket. There are any number of us in the same situation. After the usual wringing of hands and gnashing of teeth, let's face this meat canning proposition with a will—and where there is the will, there is always a way.

For years I have done canning of meat and vegetables, using a wash boiler and I have lived to tell the tale. With proper care and cleanliness it can be done safely and well. That is why I now attempt to tell you of my own experiences.

The first rule to remember without fail is that of absolute cleanliness.

You cannot be too careful and you cannot be too clean when you set about a canning job. The second rule is: Follow every direction as given by the best guide book you can find on canning.

Read and then reread those directions until you can repeat them in your dreams. Keep the book handy to check whether that was for "packing the product" to within "an inch" or "an inch-and-a-half" from the top of the jar. Once in canning chicken I forgot to wipe the grease from off the rim of several of the jars. The contents spoiled. Another time I neglected

to check a few of the re-used rings and the contents of six jars of tomatoes had to be thrown out. Depending on the type of jar top there is a correct procedure to follow. Learn every step and so prevent confusion of the various rules.

Do one thing at a time. When you are canning meat, devote your entire thought and time to the job. Forget your favorite radio drama or the news broadcast for the time being. When the boiler method is used the job will require most of the day, counting the three hours of steady boiling.

BEGIN by having the kitchen clean and the equipment needed ready to hand. You will not do your best work surrounded by disorder and dirty dishes. Have plenty of hot water. You will need about twice the amount you expect. Water boils away swiftly. The jars in the boiler must be covered by one inch of water at least. The boiling must not stop with the addition of cool water. Be sure that the water added to keep it at this level is boiling. When the directions are for "three hours of continual boiling" just that is meant.

With the kitchen clean as a whistle, you are ready to start. The jars are washed in a clean sudsy water, rinsed well and put in a warm place until needed. You have a good supply of water boiling to scald them before use. As you wash them carefully, check each one for even a tiny chip, crack or other blemish around the top.

The square jar will be much easier to lift from the hot water. Provide yourself, if you possibly can, with a clamp lifter. Never use a jar in which food has previously spoiled without sterilizing for at least 15 minutes. I always mark the can, when I remove spoiled food, by tying a string around its neck. When a few such have collected, I place a folded cloth on the bottom of the wash boiler, set the jars in, cover with water and boil.

With the vacuum-type lids, the rings may be used again. Place each ring on a flat surface to see if it has been put out of shape. Put the lids in a pan

of water and have a fork at hand for lifting them out. Let them sterilize until needed.

Place the boiler on the stove, at the time you are starting to wash the jars, and fill with water to the right depth. Place in it the rack which is to hold the jars at least one-half inch from the bottom of the boiler. This rack, your husband has likely donated to the cause, making it of lath or galvanized wire.

Now you are ready to begin preparing the meat, which if freshly killed, has cooled the required 24 hours or more. There are many good ways of preparing meat for canning. Your wash boiler probably holds 13 quarts as that number fits nicely, without crowding.

So you may have to choose the simpler method. I prefer the hot pack especially for meats. Flavor is elusive and every step taken to preserve it both at canning and cooking time is most important.

I cut the meat into chunks that will go easily into a jar. Then sear the chunks of beef, pork or chicken in a skillet with plenty of butter, transferring them to the oven to brown until all is ready to pack into the cans. Other shortening may be used but I consider that butter is the proper one for flavor. I prefer to can without salt or other seasoning at the precooking stage. I find it much easier to get just the right amount, starting "from scratch" in the final cooking. Never add giblets or liver to canned chicken, unless you like that flavor well enough to enjoy the whole strongly flavored with liver. Use the bony pieces for soup. You will be surprised at the number of bones in a can of chicken, even without the backbone and neck. Discard gristle and the excess fat. Try to put the less tender meat such as flank together, rather than mix with the choicer pieces. Never roll the meat in flour. This prevents heat penetration. Do not fill the jars more than two-thirds full with liquid as this also detracts from the best flavor.

When you have what you think is about enough to fill 13 jars, seared and browning in the oven, begin filling the jars. Fill to the depth recommended in your guide book and add the juice

for gravy, according to directions. Wipe off the top of each jar with a clean, damp cloth and then a dry one. Grease will prevent a full seal. Put the lid on, tighten according to directions. In case you have a little more meat than will fill the jars, you can process four pint jars in a flat bottomed bucket on another stove lid. If you have less than 13 quarts, set in a jar filled with water so as to prevent the jars from crowding in the boiler.

Dip out the water in the boiler into buckets. It should be hot by this time, but not boiling. With the water removed you can set the jars far enough apart to permit free circulation

of water. Meat is not heavy and without something to hold them down, the jars may float. I use one of the old-fashioned wire roasting racks which has hinges removed and is in two pieces. These are laid on top of the jars and weighted in the center with a clean rock or brick. Add the hot water until

the required inch or two above the jars. Cover the boiler with the lid, build up the fire and watch. Begin to count when the water around the jars is boiling rapidly. I boil meats three and one-half hours for good measure.

When the time is up, close the door or windows to prevent cold air from reaching the jars. Dip up what water you can from the boiler. Then remove the jars to a surface covered with several layers of cloth. They should be kept out of a draft while cooling. When cool, check for seal.

CANNING with wash boiler sounds like a difficult method. It isn't. Knowledge, order and care are necessary parts of the process. You must follow the steps, one by one and follow each one correctly. The woman who tells you of throwing out every last can that she processed by this method, has neglected one or more of the steps. The one who shrugs and says: "All you need to do is to add a teaspoon or so of vinegar to each jar and anything in the meat line will keep," neglected to say that she did follow the proper steps and this, rather than the vinegar, accounted for her success.

When you can meat or vegetables, you may have to run to the neighbor's to borrow a boiler. Never run to them for advice. For then there will be a dozen conflicting orders. It would be better to borrow the lady's canning book and read it before you start in



on the job. May I add another important point: Never try the oven method of canning if you have a coal or wood stove, no matter what your neighbors do. The heat in the oven is uneven and hard to control. The jars might explode during the heating period or as you are about to remove them. There have been a number of accidents from shattering glass, or parts of the stove blown off, causing serious injury to life and limb. Do not take chances with this dangerous method of processing.

So there you are! Maybe this sounds like a bit of fuss over something which is quite simple to the experienced canner. There are always beginners. I remember the first boiler load of meat that I canned. I worried myself sick and fretted like a hen over 13 chickens. It may help some other beginner to know that this state of mind passes, when she gets a little experience behind her. I only hope that my experience will give her courage to tackle such a job when it falls her way.

NO matter what you do canned meat will not taste like the fresh, but it is equally good in its own right. The proper amount of seasoning is what makes any dish. This is especially true of canned meat, where seasonings seem to bring out the flavor of the meat as well as add distinction to the dish.

Let pinch-and-taste cooking be your rule. Add salt and pepper in small amounts several times, until it is just right—you will probably find canned meat takes more salt than fresh—then add other seasonings as desired.

Before any home-canned meat is used, or even tasted, it must be boiled at least 15 minutes. Add sufficient water to cover the meat and boil it in an open pot. Food that is spoiled will look, smell and taste spoiled. Canned meat that is tightly sealed, that has a clear, rich color, has no bad odor and that has boiled 15 minutes is safe to use. Remember the canned meat has already been boiled for three hours so is very tender. Handle it carefully.

Have on hand a few jars of chicken, beef and tomato soup, and some bouillon cubes as well as all the seasonings you can use. They go a long way in relieving the monotony of canned-food meals as well as stretching your supply of canned meats. Pickles, relish, jelly, applesauce and green salads help pep up these meals, too. If you live on a farm and have plenty of butter, add just a little more than necessary to the dish. Butter is one of the best seasonings for any home-canned product, whether a meat, a vegetable or a fruit dessert.

There are very few recipes written particularly for canned meat. You might find these recipes useful which have been changed or modified to include canned meat. The beef ragout is slightly different from the usual. The beef stew with dumplings, whether vegetables are added or not, makes a fine meal.

Real Cornish pasties are made with raw meat but you can make delicious ones with raw, fresh vegetables and home-canned meat, whether it is pork, lamb, beef, chicken or venison. Add a bit of cream to the hot baked pastie, return it to the oven long enough to let the cream bubble up through and you have a gravy fit for the gods. If you make individual

pasties you might for fun, prick each person's initials in one corner of each with a fork, just as they say Cornish folk do.

Scalloped dishes are just the thing for canned meat. Some good combinations include scalloped beef and potatoes, cooked in either milk or water; scalloped ham and celery; or meat with rice, tomatoes, soup, sauerkraut or macaroni. Each of these will add variety to the daily meals.

Quick Canned Meat

2-3 T. butter	1 c. cream
1 Qt. canned meat	Salt and pepper

Place meat with liquid in frying pan. Bring to a boil; add butter; season to taste. Cook until the liquid has evaporated and has fried slightly. Add cream and let bubble a minute before serving.

Beef Stew with Dumplings

1 Qt. beef	6 potatoes, sliced
Salt and pepper to taste	2 c. flour
12 small onions	3 tsp. baking powder
12 tiny carrots	1 tsp. salt
1 small turnip, diced	1 c. milk
	2-3 T. fat

Remove the meat gently from the liquid and drain. Roll in flour; brown in butter. Return to liquid; season to taste and bring to boil.

Precook vegetables until almost tender; add to boiling meat mixture. To make the dumplings sift flour, baking powder and salt; cut in fat then add milk gradually. Fifteen minutes before serving drop by the spoonful on the bubbling stew. Cover tightly and steam 15 minutes without removing lid. Serve immediately.

Ragout

1 Qt. canned meat	2 onions
3 medium carrots	2-3 slices bacon or
4 medium potatoes	4 T. bacon fat
½ tsp. curry powder	1 can tomato soup

Slice vegetables; cook together until almost tender. Place diced bacon or bacon drippings in an iron or other heavy kettle that has a tight lid. Brown the meat with the bacon; then add vegetables, curry powder (if desired) and tomato soup; season with plenty of seasonings. Cover; cook 15 minutes.

Cornish Pasties

1 Qt. canned meat	1-2 T. butter
1 medium onion	Thick cream
2 potatoes	Pie pastry
Salt and pepper	

Make as much not-too-rich pie dough as you would for a two-crust pie. Roll out slightly thicker than for a pie; cut in squares or circles for individual pasties or leave in a large circle for one large pastie.

Brown canned meat chunks in butter or fat; season well; cool. Place on a large pastie shell, or divide equally on the individual shells, the diced onion and potato, butter, meat, salt and pepper. Moisten with thick cream. Bring the pastie up over the mixture then press edges together; dampening the edge with water to prevent it opening while baking. Bake in moderate oven one hour.

Pot Pie

1 Qt. canned meat	Rich pastry
2 c. mashed potatoes	1 onion
	Salt and pepper

Boil, then grind the meat (any kind may be used). Add mashed potato and diced onion. Mash and add any cooked carrot or other vegetable that is left over. Add a small amount of liquid from the meat, being careful not to make the mixture mushy. Season to taste.

Make sufficient rich pastry dough for a two-crust pie. Make a regular pie, using the meat mixture as filling. Bake in a hot oven for ten minutes then reduce heat and continue baking until well

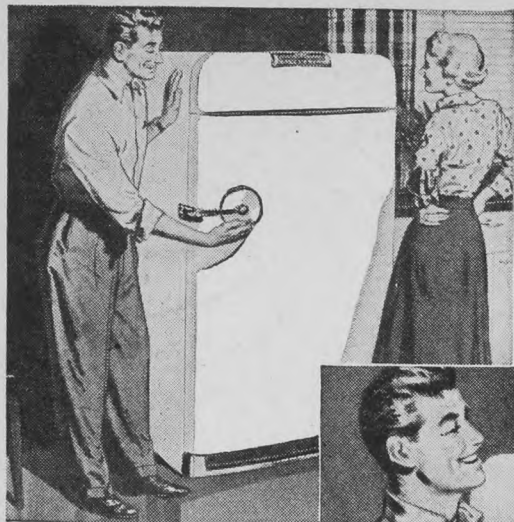
(Please turn to page 94)

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Spicy Touches

bring added zest to spring meals

by MARJORIE GILLIES

COMES spring and who doesn't yearn for a change, even if it be small!

Our northern Canadian winters take their toll on the human system and the cry of each and everyone of us is for a lift in spirit. The homemaker is faced with bringing new zest to meals to stimulate lagging appetites. With the rising cost of all foods, it is a true test of her ingenuity if she can bring some bright note of color, a new and unexpected flavor to the daily menus without an extra outlay of money on out-of-season fruits and vegetables.

For perking up meals and gaining a few compliments from the family the following suggestions are offered:

Sprinkle freshly chopped parsley or chives on the surface of a bowl of cream soup, or float finely cut green onions in a cup of steaming bouillon. Or you may add little sections of thinly sliced lemon, including the rind.

Add dry mustard, celery seed or bay leaf to pork chops as they broil.

Cook veal with paprika, sage, nutmeg or whole black peppers.

Meat loaf mixed with sage, garlic salt or dry mustard has quite a new flavor. Spareribs seasoned with chili powder, bay leaf, paprika or cayenne have a nipiness to them that will bring calls for second helpings.

When you next make beef stew try simmering pepper, paprika, a dash of allspice or cloves and bay leaf in the mixture. If you are preparing a pot roast, add a dash of ground cloves, marjoram and a few whole black peppers to give it new zest.

SALADS become conversational pieces in your home if you serve something aside from the usual run-of-the-mill variety. A generous sprinkling of celery seed, along with pepper and paprika make cole slaw a new mixture. Cottage cheese mixed with caraway seeds and served on a lettuce leaf is a real taste tempter. Serve a cluster of chilled seedless grapes or a fruit salad on a crisp lettuce leaf with a mound of mayonnaise to which has been added just a bit of mild blue cheese.

Creamed foods too often are wishy-washy and colorless. They will be long remembered if the white sauce is flavored with onion salt, mace, nutmeg, cayenne or paprika. Cream sauce for fish takes on character if seasoned with one or all of the following: parsley, dry mustard, paprika or cayenne. Cheese, of course, is a standby for added flavor to sauces. It may be cooked into the mixture or grated and sprinkled on top.

Try a turn-about in spices to give your spring pies a lift. Add nutmeg to the apple filling and sprinkle cinnamon into the pastry. If you are making rhubarb pies out of the canned product, mix grated orange rind with the fruit before making.

You may do a little experimenting in flavors on your own. Don't forget that variety is the spice of life and a little spice does provide variety. Perhaps you have your own favorite method for pepping up spring meals.



Spiced sugar doughnuts and apple cider add a festive note to any occasion.

Call about Doughnuts

Doughnut making is not difficult if you follow these few simple rules which have been carefully and scientifically worked out for you

DOUGHNUITS, the old-time treat, are as popular now as ever. Dark brown and fragrant, they are delicious for school lunches, as dinner desserts or with coffee for a midday snack. The ingredients are inexpensive and they can be kept for some time in a cool place.

Properly fried, doughnuts are not indigestible. Of course, if they become grease soaked they will cause trouble, but make and cook them as directed and they will absorb less fat than will ordinary fried foods.

To help answer a large number of the questions asked by both beginners and practiced cooks, a special, scientific study on doughnut making was carried out last fall. The findings and the basic recipe developed at that time are given here for your own special use.

Just any fat will not do for doughnut frying. For digestibility and fine flavor select a fat that will not begin to smoke until it reaches a temperature well above that required to cook the doughnuts. A high quality shortening is most successful. Cottonseed and sunflower seed oil are fine for the purpose, and lard will do. Butter, of course, cannot be used as it browns so quickly and burns at a very low temperature. Of the several fats and oils used in this group of experiments, Crisco was found to give the best results.

"When the fat begins to smoke" is no longer set as the temperature for doughnut frying. When fat smokes it is actually burning slowly. This ruins both the flavor and the odor of the fat. The cooking temperature should be kept at 355° F. Raise the temperature to 365° F. before you begin. The cool dough when added will bring it down to the correct temperature. If you haven't a suitable thermometer use the bread test—the temperature is right for frying when a cube of day-old bread browns in the fat in one minute. If the fat for frying is too hot the doughnut shell breaks and more fat is absorbed; too cool, the dough takes longer to cook and so absorbs more fat. Keep the temperature steady as the food cooks and see that it reaches the proper degree of heat before adding more doughnuts.

If proper care is given the frying fat it may be used almost indefinitely.

Make additions as necessary to the fat before starting a new batch, and after each frying session take time to clarify the used fat. For each pound of fat add a medium-sized potato cut in quarter-inch slices. Heat gradually until the potato is well browned. Strain the fat through several thicknesses of cheesecloth; let it cool and then store it in an airtight container in a cool, dry place.

The correct proportion of ingredients in the batter helps decide the amount of fat absorbed by the doughnuts in frying. More flour means less fat is absorbed, yet if too much is added a heavy, compact and dry product results. Experiments show a combination of equal amounts of pastry flour and bread flour give a light, tender product that will not crack. Increased amounts of egg, shortening or sugar will cause the dough to absorb the cooking fat. To further reduce fat absorption let the dough stand at least 30 minutes before frying.

Lower the doughnuts carefully into the fat, one at a time; cook no more than four at one time. For safety sake keep the fat at least three inches below the top of the kettle. (A pressure cooker two-thirds full of fat is the best frying kettle I know.) Cook the doughnuts for about three minutes, turning them only once, at half time.

When the doughnuts are cooked drain them on a clean, crumpled piece of brown paper. Sugar them if you like, and serve them now or later.

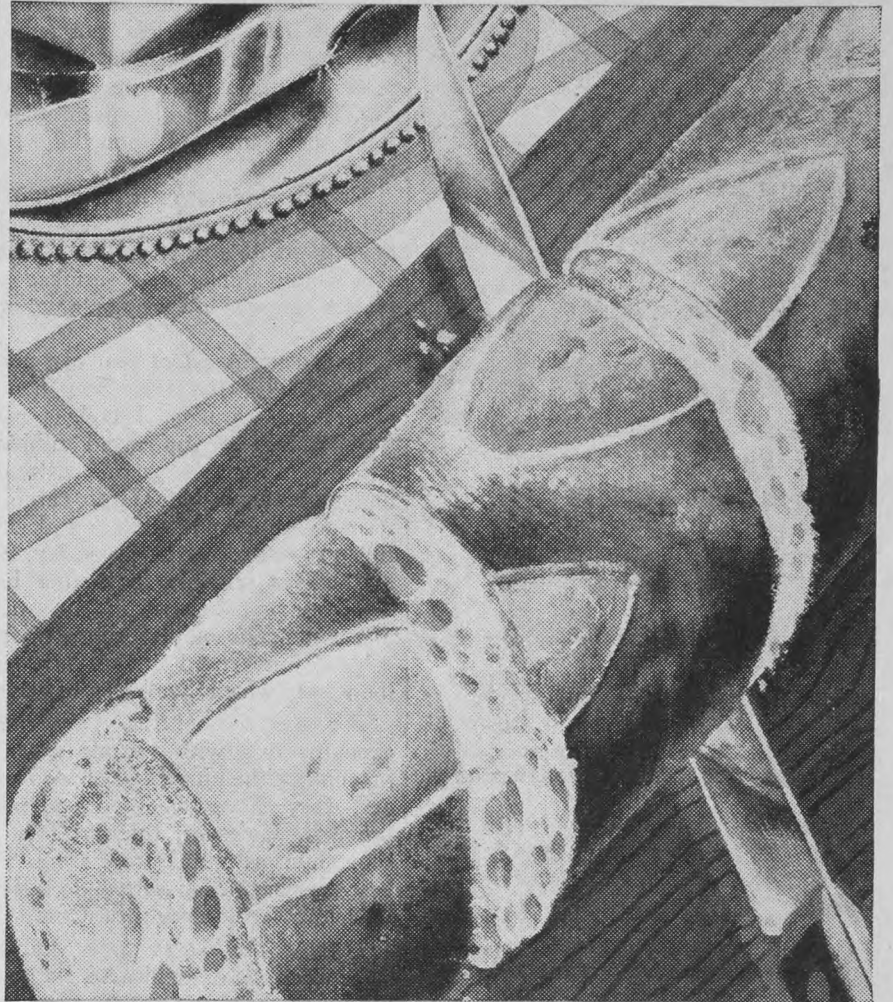
Doughnuts (Basic Recipe)

2¼ c. pastry flour	1 c. sugar
2¼ c. bread flour	2½ T. fat
2½ T. baking powder	1 c. milk
1 tsp. salt	1 small egg
½ tsp. cinnamon	½ tsp. nutmeg

Have all ingredients at room temperature. Beat the egg well. Mix sugar and salt with the fat; add egg mixture and beat well. Add milk, all at once, and mix well. Sift flour and baking powder together twice; add gradually to the batter using a total of 100 strokes. Let stand at least 30 minutes (up to three hours). Flour the board lightly; roll ¼ to ⅜-inch thick. Cut with doughnut cutter. Fry in fat (355° F.) for five minutes, turning at half time only. Drain doughnuts over the pan for a few seconds and then leave to drain on brown paper.

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FRENCH BREAD (makes 3 loaves)

Scald

- ½ cup milk
- ¾ cup water
- 1 tablespoon granulated sugar
- 2 teaspoons salt
- 2 tablespoons shortening

Remove from heat and cool to lukewarm. Meanwhile, measure into a large bowl

- ½ cup lukewarm water
- 1 teaspoon granulated sugar

and stir until sugar is dissolved. Sprinkle with contents of

- 1 envelope Fleischmann's Royal Fast Rising Dry Yeast

Let stand 10 minutes, THEN stir well; stir in lukewarm milk mixture. Measure into a large mixing bowl

- 4½ cups once-sifted bread flour

Make a well in the centre and add liquids all at once. Mix thoroughly, then knead slightly in the bowl. Cover with a damp cloth and set in a warm place, free from draught; let rise until doubled in bulk. Punch down dough, cover with damp cloth and again let rise until doubled in bulk. Turn out on lightly-floured board and divide into 3 equal portions. Knead each piece lightly and shape into a slim loaf

about 12 inches long. Place, well apart, on greased cookie sheets and with a pair of scissors, cut diagonal slashes in top of loaves, about 1½ inches apart. Let rise, uncovered, until doubled in bulk. Bake in a hot oven, 400°, for 15 minutes, then reduce oven heat to 350°, bake 15 minutes, brush with a mixture of 1 slightly-beaten egg white and 2 tablespoons water and bake until loaves are cooked—about 20 minutes longer. Cool bread in a draught, by an open window.





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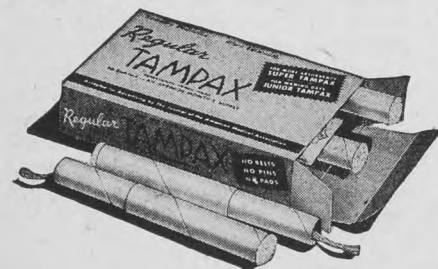
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Less Shrinkage

New treatments for fabrics reduce risks

by MARGARET M. SPEECHLY

EVERY time that materials or garments shrink in the wash, it means a dead loss, not only in cash but in comfort and fit. More than that, shrunken garments wear out rapidly because of the strain placed upon the seams and upon the weave itself.

Nobody enjoys extra mending or having to let out seams or adjust hems. Serious as this is from a personal standpoint, think what shrinkage of fabrics amounts to yearly on a national scale.

To a certain extent you can avoid shrinkage by the way you handle fabrics on washday. Woollens need not contract if you avoid rubbing, twisting, strong soaps and extremes in temperatures, and if you carefully reshape articles while they are drying. But no matter how hard you try, it is not always possible to predict how woollens will behave in the wash. Much depends on the nature of the original fibres used in the yarns and the way in which the cloth was woven.

For years scientists have been experimenting with various ways of preventing the shrinkage of woollens, and they have made considerable progress. However, there still is no such thing as shrink-proof wool. The best they have been able to do is show how to make it shrink-resistant.

During the last war, military authorities were so pleased with the results of shrinkage-control processes, that they demanded non-shrinkage tests for all knitted items they bought for the troops. Consumers are reaping the benefit of such research, but it is still too soon to be sure of 100 per cent prevention of shrinkage.

There are two types of shrinkage in woollen goods. At one stage in the manufacturing, they are stretched out to dry. Later, when the fabric is laundered at home, this tension is released. The result is shrinkage. Manufacturers have found ways to overcome this to a large extent.

The other type of shrinkage is due to the matting or felting of the tiny wool fibres after repeated washing or after careless laundering. There is no way to restore the shrunken garments because of the changes that have taken place in the sensitive fibres.

There are new processes which greatly improve the service qualities of wool yarns. Some are chemical in nature and others involve the use of special resins. Such treatment allows you to wash blankets, underwear and knitting yarns with greater confidence, but remember there is yet no process capable of entirely doing away with shrinkage.

Real progress has been made in controlling the shrinkage of cottons and linens. With this class of fabric, it is not the kind of soap or the temperature of the water that causes shrinkage, but the amount of tension exerted on the wet material during finishing.

Manufacturers have got over the difficulty by finding out exactly how much each bolt of cloth will contract in length and width when the tension is released. Instead of this taking place in your washing machine the first time

the fabric is laundered, it is done in the factory under controlled conditions.

Unfortunately, not every bolt of cloth on the market has been given such care, but you can detect material so treated if it is labelled sanforized. This process guarantees that the shrinkage will not be more than one per cent, which is the same as saying that garments will retain their original fit. Rigmel and perma-shrunk are other processes that can be relied upon to give satisfaction.

While experts were looking for finishes that would reduce the tendency of cottons to wrinkle, they developed processes capable of controlling shrinkage as well. In some cases the yarns were treated with resins before weaving.

Rayons have been greatly improved too, by new methods that control not only shrinkage, but sagging or stretching. It is now possible to purchase rayons that retain their original dimensions.

Naturally, each additional process used in manufacture is going to increase the cost of the material or garment, but in deciding whether you can afford the price, consider what the alternative will cost you.

IF you purchase curtains without knowing whether they will shrink, you will have to allow extra length. You may even run short if you do not guess correctly, or if you purchase too much you will have a remnant that may not be enough for another window.

You run the same risk when buying chintz or cretonne for draperies or slip-covers unless you choose material that can be relied upon to retain its original size after washing. Look for labels or statements printed on the selvage concerning possible shrinkage.

In buying sheeting it is important to select material that will keep not only its original length but its width as well, since some sheeting contracts in both directions the first time it goes into the wash.

If you are shopping for ticking, either for pillows or for slip-covers, you may not be able to find any that has been preshrunk. In that case buy five per cent more material as a safety measure. It is easy to see how costs increase when extra cloth has to be purchased.

Do not be satisfied with materials that are advertised as "preshrunk" or "shrink-proof" unless the manufacturer states the percentage of shrinkage to be expected. "Residual shrinkage" refers to the amount that may occur during the first wash. In sanforized fabrics the residual shrinkage will not be more than one per cent. Garments that will shrink more than three per cent are likely to lose their original fit.

As you shop for yardage or washable garments, look for statements on labels or selvages concerning shrinkage. Even if labels are hard to find, ask for them. Question the clerks, request for information from the store management, and gradually the word will get around that consumers are anxious to invest in reliable fabrics.

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Lynn Bari, 20th Century star, uses a magnifying mirror for careful application of makeup.

Preserving Good Looks

Certain steps taken in time safeguard loveliness and make prettiness
by LORETTA MILLER

BE good to yourself for good looks! It isn't a question of beauty or conceit, but the sincere desire to look and feel your best at all times. By keeping your good looks and grooming at top level, and with only a minimum of effort, you will find that even the most difficult tasks will be easier and the problems of the day will seem less troublesome.

Have you ever caught a glimpse of yourself in a mirror when your spirits were low and you looked woebegone and forlorn? That really is the time to take yourself in hand. But such a time will never come if you remember to keep yourself looking fit and well groomed. There is little sympathy for the girl or woman who continues to look as though she had lost her last friend. Regardless of the type, texture or color of her hair she can find just the right way to handle it and so keep it looking orderly. And by the same token, even the simplest housedress takes on a festive look when a colorful apron is worn over it, when a pretty collar is added to its simple neckline, or when either gay buttons or a pretty pin is worn. A dash of color on the lips, or a blush of color on the cheeks makes the difference between a drab personality and a bright one.

Extremely fine hair is the greatest offender to good grooming. It seems difficult to find a hairdo that will keep every hair in place and yet be flattering. But it can be done! First discover whether you look best with a short or a longer hairdo. If it is to be short, either give yourself or get a good permanent wave. It will save you untold hours of fussing. Longer hair will probably look better if it, too, has a permanent wave. Unless one's features are perfectly proportioned, it's nine to one that softly waved hair is more becoming, and it certainly does remain well dressed longer than hair that is poker-straight. Study yourself in the mirror to determine whether your hair should be brushed back away from your face-framing hairline or whether it should cover your ears and lie close to your cheeks. If you are going to give yourself a permanent, read carefully the directions that accompany the wave materials you buy. If you get a permanent from your hairdresser, it's well to ask her how best to care for it.

Every permanent, the salon as well as the home variety, is all the lovelier for a thorough brushing each day and a good washing every week or ten days.

Even the tightest curl can be groomed to appear natural if it is well brushed every day. This is of first importance in giving the hair a clean lustre and softness. (Wash your brush every time you wash your hair.) Hold one hand over the brush as you draw it through your hair so that it smooths over the hair as the brush is moved along. This will prevent the hair from getting out of line. If the hair tangles and is unmanageable after a permanent, give it a light vinegar rinse. To two-thirds glassful of warm water add one-third glass of vinegar and pour this over the hair. Then rinse it off with a glassful of clear water. This will remove the last trace of soap as well as make the hair easier to comb through. Remember to treat and train a permanent just as you would naturally curly hair. Set it after each wave and as often as necessary between shampoos. If you go to bed with your hair up in pins or curlers, wear either a pretty net sleeping cap or a triangular scarf made of net. (A nightcap should be made of any loosely woven material.)

Always, always, do something about your appearance in the morning. Never start the day until you have brushed your hair into place, washed your face and, if possible, added a touch of color to lips or cheeks. Facing the family knowing you look your best will start the day brighter. Every man likes to think of his wife as his bride and the simple early morning grooming steps will keep that memory alive.

Getting a midday dinner and feeding a hungry family won't seem half the chore if the task is approached with the right attitude. The busier the housewife, the more important it is for her to take three minutes for herself. Be good to yourself! Snatch these minutes (while the potatoes are boiling or after things have been started) to run the washcloth over your face, chest, shoulders and neck. Then comb your hair and touch color to your face. Look at your reflection and see if you don't feel fresher and happier.

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after the midday rush? But the demands of a baby or a grown family, plus the hundred and one things around the house that must be done, take almost more hours than there are in the afternoon. Please believe that this is written from experience . . . even the most difficult and the great number of chores will be more easily accomplished if a ten or fifteen-minute rest period is taken. Lie flat on your back if possible, and close your eyes. Place a small pillow low under your shoulders, letting your head hang slightly over it. This will help relieve any tension across the shoulders or nape of the neck. Spread your arms out at your sides, or let them lie close along your body. Then consciously let every muscle of your body relax. If you can't lie down for three minutes, select some sitting job and sit with your feet raised on a level with your body before you begin the more active chores. This, really, is being good to yourself and will pay big dividends in accomplishing the afternoon jobs with greater ease.

One of the smartest farm girls I knew always looked attractive whether she was driving a tractor, milking a cow or singing a lullaby. Because she worked outdoors right along with her husband, as well as caring for two small tots, she found ways of keeping herself lovely. A bright scarf, cut from an old dress, then hemmed, was always worn around her neck, and a matching strip served as a hair ribbon.

Whether this girl wore jeans or a housedress, the colorful scarf and bandeau touched off the costume with a flair and seemed to make the occasion a joy rather than a chore. Soon everyone in the nearby farms got the habit and before long the entire community seemed brighter and cheerier.

Keep shoulders erect and abdomen in if you want to keep your figure under control. Concentrate on your posture while during chores both in and out-of-doors and before long the new posture will become second nature and your figure will be improved. It is easy to get into wrong posture habits, because muscles that preserve erect bodies grow slack and lazy. Try keeping the back straight and abdomen in if you want to strengthen or keep strong the important muscles.

After the evening tasks have been done and the family settled down for a bit of relaxing is the time to prepare for the next day's good looks. If nothing more, the hair should be brushed and perhaps put up in pins or curlers and the face washed. All too often these steps are put off until sleep overtakes one and the bed beckons. The simple process of washing face, hands and neck, brushing and putting up the hair, and slipping into nightclothes, seems refreshing so that one relaxes more easily.

Learn how to be good to yourself. Every grooming measure suggested can be done quickly and will help make even the hardest tasks easier.



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by FLORENCE WEBB

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and opens out to 30 inches. In the bottom pockets we even keep the attachments for our sewing machine. The frame and shelves are wood. The pockets are made like a shoe bag and tacked like upholstery to the frame. Bottles hold buttons, etc. The instruction chart is No. S-118, price 25 cents. Address orders to The Country Guide Needlework, Winnipeg, Manitoba.



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The Well-Dressed Look

A basic wardrobe will give you becoming and appropriate clothes for all occasions

by LILLIAN VIGRASS

SELF-CONFIDENCE and poise come from knowing you are appropriately dressed more than from any other single factor. To look your best your costume must be becoming as well as appropriate and if it is to give you poise must also have good style. By carefully planning a complete wardrobe before doing any new buying, and by adhering to the plan in all shopping and sewing, you can be confident that you are well dressed for all occasions—and for the same amount of money or less than you would spend buying clothes haphazardly. In fact, the less one is able to spend on clothes the more essential it is to have a plan. One can wear well-matched clothes more often and for much longer and still be well dressed.

The object in wardrobe planning then is to provide for each occasion a complete costume, becoming to the wearer and appropriate and with all parts harmonious. This does not mean necessarily a different costume for each occasion, but rather a few well-chosen clothes selected to fit a basic color scheme and with accessories to match.

One set of coat, hat, bag, shoes and gloves that harmonize with every suit or dress is the first requirement of a satisfying wardrobe. Then the purchase of a new dress does not require a whole new set of accessories. This does not mean that all the clothes in a wardrobe must be the same color but it does mean that no matter what color suit, blouse, dress, accessory or trimming one buys it must look well with the color of your coat and hat.

A dark color is the best as the basis for a wardrobe. One will probably keep the same basic color for several years so choose a color that is becoming, even if it is not high fashion this season. Be sure it is practical and that it is available in your locality. One of the more popular schemes is to choose navy for spring, white for summer and black for winter wear. This plan can be followed for a number of years with only a change in the combining colors to make a new and gay outfit for each season.

BLACK is a good basic color as one tires of it less quickly than any other. It is the perfect background for jewelry and nice accessories, but it is not practical for everyday wear as it shows dust and powder quickly and looks shabby in a low-grade fabric. Black combines well with the lavender and mauve shades, almost all greens, yellow, grey, beige, bright blue, red and pink.

Brown is best with orange, rust, coral, copper, salmon red, gold, cream, beige, tan, green, yellow, aqua, light blue and white. Brown or tan accessories are essential to complete an ensemble.

If your basic color is navy use with it the mauve to violet shades, white, chartreuse, lime, jade green, grey, red, fuschia, coral, pink, rust, orange, beige and cream; tan leather; brown furs and black or navy accessories.

A basic dress is the background of a dress-up wardrobe, just as a suit is the basic piece of a business girl's ward-

robe. Different accessories can create interesting changes. For fall and winter choose a black, navy or brown wool or crepe in a solid color. For spring and summer one can use the same plan with an aqua, grey, beige, gold, natural or white dress. A peplum, belt or jacket may be added to the usual accessories of scarves, sashes and collar and cuff sets. A dress is not basic if it has sewn-on trimming, but on a basic dress you might tack a fresh collar, a monogram or a pocket for temporary wear.

If you sew well you may be able to make a basic dress yourself. It must be fitted perfectly, but not tight, and the lines must be flattering. It should follow the mode but not be extreme, and be simple but have interesting detail or a beautiful texture. It should be a soft one-piece style with rather plain sleeves and a natural neckline that is a good background for jewelry and accessories.

A PRINTED dress in the wardrobe, although not basic, is a good stand-by. It is a practical, dependable dress that travels well, packs well and is a good general-purpose dress. It should be worn usually only in the spring and summer—and one new one each spring should be sufficient. A gay fresh spring print helps to fill out a wardrobe in the in-between season of late winter and a carefully chosen, flattering print that contrasts nicely with the basic wardrobe color is a good buy for most women.

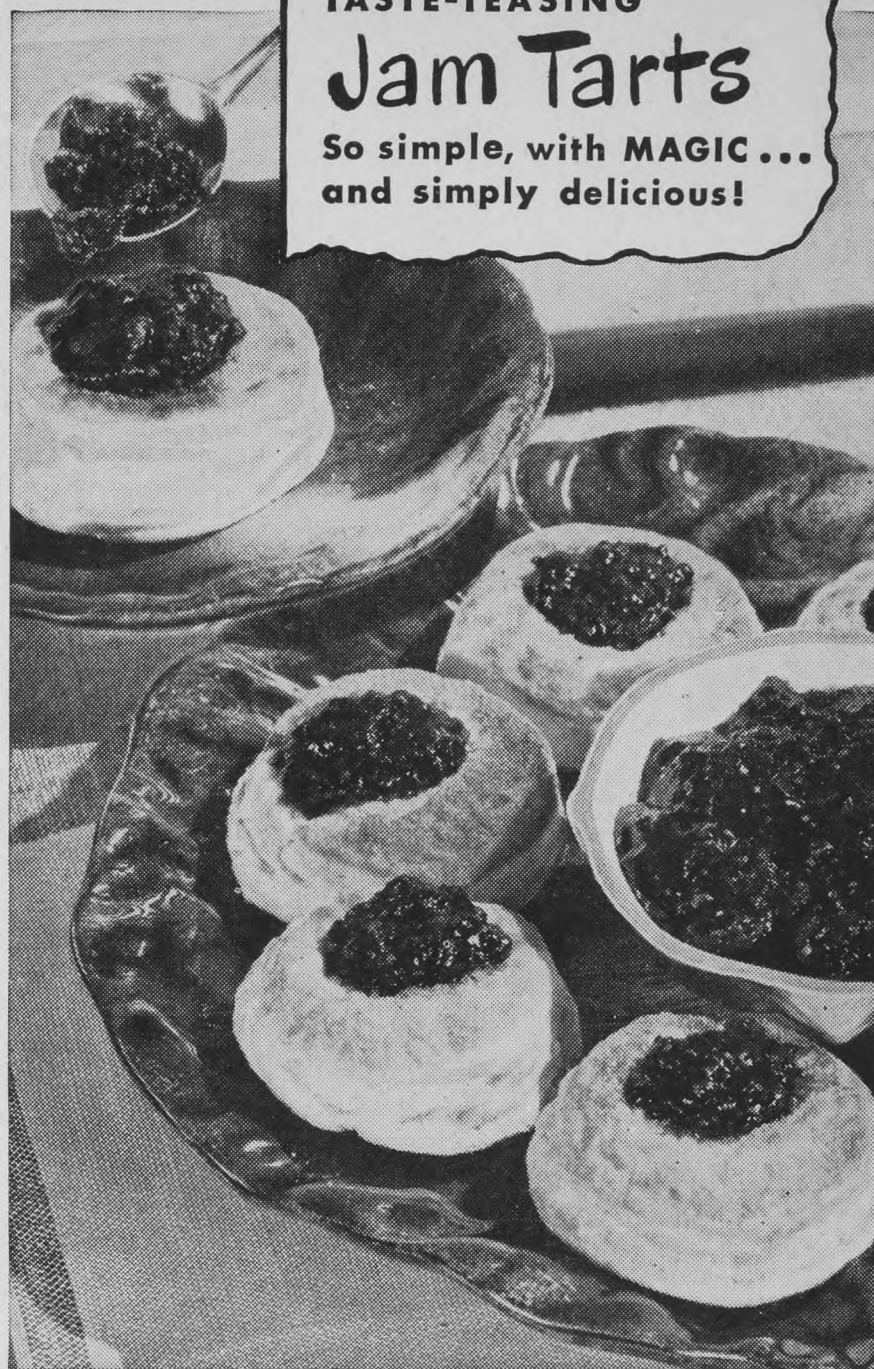
The secret of a good wardrobe is to have fewer garments—most women have far too many clothes—and to have each selected with greater care. Then each item is suited to the wearer; it is wearable practically all the year round and appropriate for many occasions. Choose classics in coats and suits and simple dresses. A classic is conservative, not dated, in style and is fine in design, fabric and workmanship. For example a straight or semi-fitted coat with a small collar is a good all-purpose style. When buying choose a garment suitable for more than one season, such as a medium weight coat, a suit without fussy details and a small felt hat rather than a large straw. Then one can select accessories to "dress up" a classic or "dress it down" as the occasion demands.

At all times buy as good quality as you can afford and stress quality rather than quantity. Shop for quality of fabrics and workmanship and for correct details if you want satisfaction. A dress that is a good buy at \$29 will wear three times as long as one for \$15 and will give more than three times the satisfaction. A blouse you make for \$1.70 may outwear one that costs \$3.70. On the other hand your home-made blouse may not make you very happy because it lacks style, it isn't sewn very neatly or because it is poorly fitted. To buy a basic article at full price when it comes into fashion will bring more satisfaction than to buy an article at half price when it is going out. A style will be in fashion for at least three years if it is well chosen and is not a fad, but rather a more clever style that can be

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JAM TARTS

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1 tsp. salt
4 tbs. shortening
1 egg
½ cup milk

1 tbs. light corn syrup
Raspberry Jam
Cinnamon sugar

Sift together flour, baking powder, salt. Cut in shortening with 2 knives or pastry blender. Beat egg; add milk and corn syrup; add to flour mixture, stirring only enough to make dough hold together. Knead on lightly floured board ½ minute. Roll out ½" thick; cut with biscuit

cutter. Place on greased baking sheet; make deep impression in centre of each with thumb, pressing firmly. Drop raspberry jam in each hollowed out centre. Brush biscuit dough with milk; sprinkle with cinnamon sugar. Bake in 425° oven, 12-15 minutes. Serve immediately.



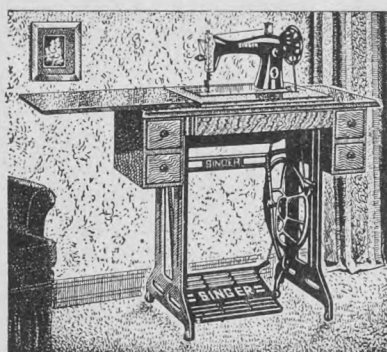
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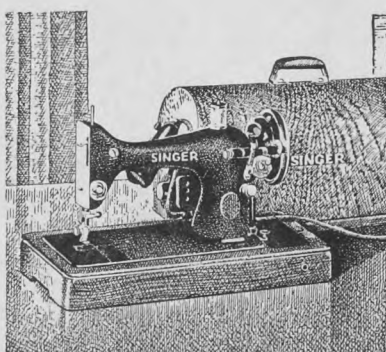
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adapted to oneself and to one's needs.

Buy, or at least plan, the more expensive things in the wardrobe first, then plan the rest of the wardrobe around them. Plan a coat before the dresses, and select only shoes that fit in with the coat, in both style and color. Do not buy the hat and gloves before the dress, or a blouse before the suit. It is always a good idea to rotate major expenses. You may plan to buy a good winter coat one year, a spring coat or a suit the next year and so on.

Accessories such as shoes, hat, purse, gloves and jewelry need not be many but should be the best quality you can find for your money. Good accessories should be individual and interesting, even gay, but of such a style that you can wear them with several dresses and several costumes.

It is important to have enough clothes to provide a change. A business woman needs more than one suit, a homemaker should emphasize clean and simple housedresses, low-heeled

shoes, and one or two dresses for afternoon wear at home. Clothes last longer if they have a rest between wearings. They lose their wrinkles and regain their resiliency and elasticity. Girdles and shoes not only wear better but are more comfortable after a rest.

For warmer weather one needs a fair supply of washable garments in order to keep fresh looking. Inexpensive wash dresses, durable, neat and launderable, even if not high style, can fit well and be becoming.

Do all you can to have your clothes last. Buy clothes that won't fade, shrink or wrinkle excessively if properly cared for. Care for them regularly and well—a clothes brush is one of your best investments. And plan your wardrobe so you have clothes for play and leisure as well as for "good." Wear these when the occasion demands and save the expensive and more fragile garments for the right occasions. Wear your clothes as often as you can to get your money's worth, but treat them kindly for extra wear.

Home-Style Canning

Continued from page 87

browned. Make gravy of the liquid from the meat. Serve pie in wedges topped with the hot gravy.

Canned Meat Casserole

Place boiled meat (beef or chicken) in casserole. Add a can of beef or chicken soup (diced onion or celery will give added flavor) to the liquid from the meat. Bring to a boil; season and thicken. Pour over meat. Top with pie pastry or rich biscuit dough. Make several incisions in crust for escaping steam. Bake in a moderate oven until a rich golden brown.

Meat Loaf

- | | |
|------------------------|---------------------------------|
| 1 Qt. canned meat | Salt and pepper |
| 4 T. tapioca | Dash of cayenne |
| 2 T. minced onion | 1 T. Worcestershire sauce |
| 1 tsp. chopped parsley | 1 c. tomato juice or meat broth |
| 3 T. melted butter | |

Grind meat; add other ingredients. Mix well. Shape into a loaf and bake in a hot oven until well browned. Baste frequently with a mixture of butter and water. Serve hot or cold.

Baked Canned Chicken

Remove all the bones possible from a canned chicken. Boil uncovered in liquid for 15 minutes. Place meat in a baking dish; season. Pour over meat 1 c. sour cream (or sweet if preferred). Bake half an hour in moderate oven.

Creamed Chicken and Peas

- | | |
|---------------------|-------------------------|
| 1½ c. cubed chicken | ½ tsp. salt |
| ½ c. cooked peas | 1 c. milk or thin cream |
| 2 T. butter | ¼ tsp. pepper |
| 2 T. flour | |

Melt butter in saucepan; stir in flour and seasoning. Add milk; bring to boil. Add chicken and peas; heat to boiling; season and serve.

Canned Chicken Roll

Make enough biscuit dough for a dozen biscuits. Season dough well and roll to half an inch thick. Spread with minced chicken that has been moistened with gravy and seasoned. Roll up and cut as you would for cinnamon rolls. Bake in a hot oven for 15 minutes. Make gravy from liquid off meat or from boiling water to which has been added chicken soup or chicken bouillon cubes.

Shepherd's Pie

Prepare and season meat, whether canned or left over from a stew. Place in greased baking dish. Fry an onion in

butter until golden brown; add meat stock and thicken. Pour over meat. (A little chili sauce or curry powder gives added flavor). Add water, if necessary, to cover. Top with a layer of mashed, seasoned potatoes; brush the top with milk and beaten egg yolk. Bake in a moderate oven for 20 minutes or until nicely browned. Garnish with onion rings or chutney; or sprinkle with cheese and paprika for added zest.

Chicken or Beef Hash

- | | |
|----------------------|-----------------|
| 2 c. boned meat | ½ onion |
| ¾ c. mashed potatoes | ¾ c. stock |
| | Salt and pepper |

Chop meat fine; dice onion; add remaining ingredients. Form the mixture into round, flat cakes and fry to a golden brown. Serve with a sauce made of ketchup, Worcestershire sauce and horse radish or vinegar. The hash may also be baked with corn or tomatoes in a casserole for 15-20 minutes.

Baking Short Cuts

Try whipped cream sweetened with hard candy, peanut brittle or peppermint sticks on wedges of fresh cake for a supper dessert.

If boiled frosting will not thicken, put it in the double boiler or set the bowl over boiling water, and continue the beating until the frosting begins to thicken.

Egg whites, warmed to room temperature, beat more readily and give a better volume than do those which are still cool when used.

Brown sugar will stay moist if it is kept in a screw-top jar with a water-soaked piece of cardboard in the jar cap.

To cut down on dishwashing when baking, sift the flour and sugar onto sheets of waxed or brown paper rather than into bowls.

Baked apples will keep their shape better if they are baked in buttered muffin tins.

To keep soft cookies from drying out, store them in a covered container and add a piece of apple or orange.

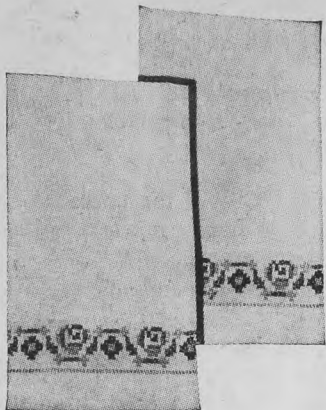
To freshen rolls put them in a paper bag, sprinkle them lightly with water and warm them in the oven.

Trim Guest Towels

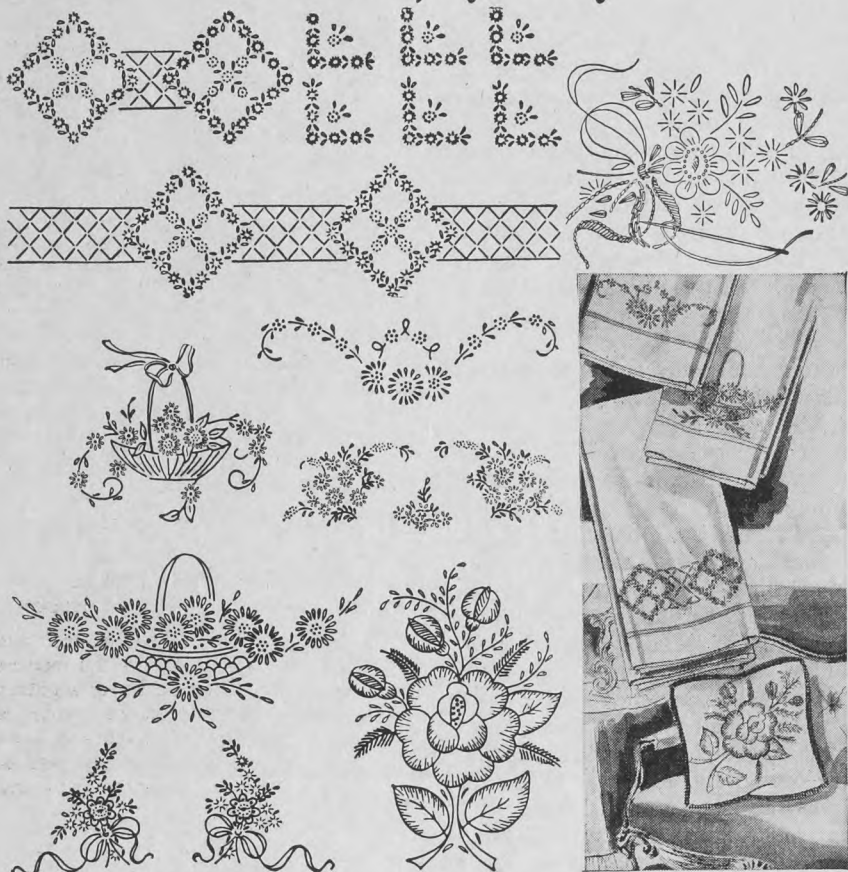
Rose cross-stitch design

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We have stamped these unusually attractive towels on best-quality, ivory Irish embroidery linen. The cut towels are 27 by 16 inches. An instructions chart tells you just where to place the colors but no special instructions are required for working the simple cross-stitch embroidery. Finish the ends with hemstitching or lace and you will have a gift for a June bride, for your favorite bazaar or for your own home. Design No. 867. Price \$1.75 a pair. Threads are 20 cents extra.



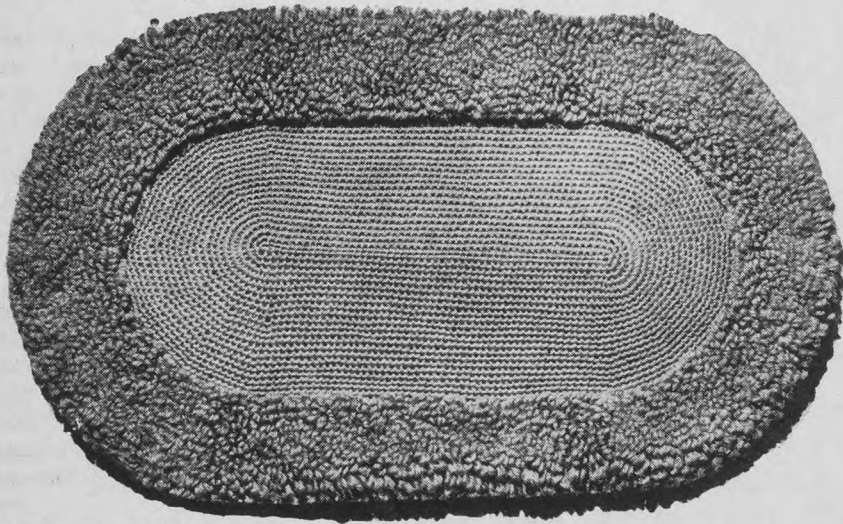
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Design No. T-155.

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A Crocheted Rug



Design No. C-341.

We used rug wool for this pretty bedside or fireside rug but other materials can also be used. Cotton carpet warp is excellent and evenly cut rags are also suitable. The center is done in single crochet—the outer edge in loop stitch. Worked in pastel colors it makes a suitable bathroom rug. Pattern is No. C-341. Price 25 cents.

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Snow on the Wheat

It was an experience faced by many a pioneer farmer and one which seared itself into our memories

by ANNIE S. GREENWOOD

WHAT appears to be defeat or even catastrophe is not necessarily so. Often it is just what is needed to ensure success.

Like thousands of other early-day frontier farmers of the prairie provinces and midwest states, my family had experiences which illustrated this truth. After a long, cold winter the drifts would disappear under a smiling sun and gentle breezes. Warmed by that springlike condition, the fields so carefully plowed the preceding October would lie mellow, their rich brown soil ready for planting. From apparently nowhere, great flocks of blackbirds would swirl and swoop in the sunshine, greeting the world with their cheerful chorus. As they sang in delightful unison, one could translate their happy, challenging notes into "When you going to sow your wheat, sir?" a crescendo climaxing on "wheat." Over and over this pert, insistent question rang through groves and over fields.

Spring had really come. How good to know it; how eagerly we began the first and most important farm work, that of sowing the wheat! Of all the grains raised in those regions, it took the longest to mature; hence must be planted earlier than the others. It was the backbone of the frontier farmer's living. All else revolved around his wheat fields. No other crop was so important. On it he depended more than on anything else in those first years before experience had proved the wisdom and absolute necessity of diversified crops. Accordingly, his first and main spring work was to get his wheat into the ground. Ready for those balmy days he had diligently prepared his seed, choosing the finest regardless of cost, screening it most carefully, sometimes even hand-picking it to ensure that no foul weed seeds be left to spoil his crop.

How wonderfully and quickly he was rewarded! A few days would pass, each one filled with spring work, and before it seemed possible the delicate sprouts of the wheat could be seen. A few more days and the fertile acres would look like great lovely carpets of green velvet. What a beautiful picture! No matter how long the hours of every day, nor how wearying the work, the sight of those richly promising wheat fields brought courage and strength to every member of the family. There lay the beginning of what in the bright hot days of August would mature into the farmer's harvest. That was the source of his year's income.

"I can almost see it growing, especially on that southern slope," was a frequent remark as the green shoots thickened and the color began to darken a trifle.

BLACKBIRDS still whirled gaily beneath sunny skies and crows cawed in lusty protest because the grain on which they had so greedily stuffed themselves was no longer accessible. In hundreds of ways Nature proclaimed, "Spring is here. Spring is here!" Wrens and warblers sang it liltily as they went diligently about their domestic affairs; robins added

their happy "Cheer up, cheer up," and every farm family rejoiced in the promise of the season.

"What a good stand of wheat! We'll have a wonderful crop."

After the long busy day, with aching muscles, but contented minds and happy hearts, we would drowse through the evening devotions then go to bed to sleep soundly until another early dawning. "And while we sleep, the wheat keeps right on growing," mother would so often say.

Then one morning—all our happy hopes vanished! I can picture it still—can feel the desolation which swept over us. Gone was the lovely green; silently the blackbirds huddled in sheltered places. A vast whiteness had settled down over everything. Snow lay deep upon the velvet green. The precious wheat into which we had put so much work, expense and hope now lay buried under that forbidding white shroud above which hung a cheerless grey sky. Had all our bright promise for the year's crop been destroyed while we slept? How could that tender young wheat withstand such weather? And it had made such a good start!

ONE year or another probably every farmer in all those great prairie provinces and states faced that experience for the first time. It was an event which seared itself into consciousness—never to be forgotten. From it, however, each one learned something which changed the aspect of the whole experience. He found that his wheat was not injured; his crop was not destroyed. Yes, temporarily, the wheat seemed to stop growing. The fields were soggy, wet, cold. The pale sun had little warmth. Slowly the soft snow dripped itself down into the soil. There was nothing to encourage growth. The wheat seemed merely to stand still. But Mother Nature knew what she was doing and went about it silently but effectively. With no warmth to cheer the young wheat stems and draw them up, they turned their efforts downward. Roots, which so far had been somewhat superficial, now reached deeper, took on a sturdy thickness, branched out more strongly and so became established for future needs. The root system developed while the parts above ground seemed to stand still.

Later, the cold grey clouds passed, the sun graciously forgot its period of sullen face-hiding and smiled once more as the wheat, now fed from the strong root foundation, grew in abundance and beauty. It had gained more during the cold, gloomy days than it would if the weather had remained warm. In midsummer there came days and days of blazing sun and hot winds, but the wheat was nurtured and sustained by those long-fingered roots which had developed in the period of cold frustration.

"Oh, ye of little faith," the Master might again exclaim. Why were we so easily discouraged?

What the snow does to the wheat fields is a lesson we have to learn and apply all through life. Today's frustration (Please turn to page 98)

Well Suited for Spring



Special Pattern No. 3—Here is an outfit that you will wear happily for many seasons. Designed by Jean Modiste, the dress features three-quarter raglan sleeves and a slim skirt with a back pleat for walking ease. The box-style coat has an easily made collar that fits well at the neck and bracelet-length cuffs. Both coat and dress are as smart alone as together. Sizes 10, 12, 14, 16, 18 and 20 years; 32, 34, 36 and 38-inch bust. Size 16 (34) requires $3\frac{1}{2}$ yards 54-inch material, $1\frac{1}{2}$ yards 54-inch contrasting and $1\frac{1}{2}$ yards 39-inch lining. Price 50 cents.

No. 1981—This dressmaker-style suit features smoothly rounded collar and lapels and turnback cuffs. The jacket is gently gathered to a belt at the back; the skirt is slim and straight. Sizes 12, 14, 16, 18 and 20 years; 32, 34, 36 and 38-inch bust. Size 16 (34) requires 4 yards 39-inch material or $2\frac{1}{2}$ yards 54-inch material and $1\frac{1}{2}$ yards 39-inch lining. Width at lower edge of skirt $1\frac{1}{2}$ yards. Price 35 cents.



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No. 849—Two-piece suit featuring a new, longer, fuller coat over an arrow-slim straight skirt. Sizes 10, 12, 14, 16, 18 and 20 years; 32, 34, 36 and 38-inch bust. Size 16 requires $2\frac{1}{2}$ yards 54-inch material, $1\frac{1}{2}$ yards 54-inch contrasting and $2\frac{1}{2}$ yards 39-inch lining. Price 35 cents.



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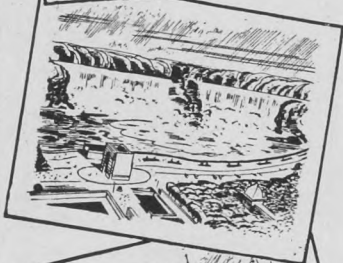
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tion is no proof of defeat. Though beyond our understanding, it holds the key to our greater good. Repeatedly we stand face to face with what appears to be the ruin of our hopes, the destruction of our plans, the end of our dreams. When some such experience comes, let us stop and consider: Have I done everything I can to bring the right results? If so I have freed myself from responsibility for the out-

come. The present state of affairs may be the very thing needed to promote success. If there is anything I can do to remedy conditions, I shall do it at once, as intelligently and efficiently as I can. If there is not, I shall turn my attention to something else, calm in the consciousness that the root system, the foundation for the perfect good, is being developed by this apparent calamity.

Transportation

Continued from page 7

effect of such a measure at this time would be particularly unfortunate."

For the sake of argument let us accept the charge that the deficiency caused by the Crow rates imposes a burden on other shippers, what proposals are put forward to end the alleged unfairness and how are they regarded by the Royal Commission? One suggestion put forward by the C.P.R. is an inquiry to settle on a rate which would be necessary to meet the cost of the service. This suggestion has already been turned down by the Board of Transport Commissioners. It involves more than bookkeeping. Almost every item involved would be the subject of interminable wrangle, and the end result, after the expenditure of much time and money, would be a rate that would be no more acceptable than the \$23 million claim of loss now put forward by the railways.

ANOTHER suggestion is that parliament should vary the Crow rates in accordance with general rate changes ordered by the Board of Transport Commissioners. But before that is done a lot of ground should be cleared. "Shippers in the Maritimes, who on the whole are satisfied with the protection afforded them under the Maritime Freight Rates Act, have not joined in the suggestion that the Crow rates should be altered because of its effect on them. Shippers in the central provinces are in such an advantageous position in comparison with those in the West as to make it clear that they require no relief."

On the railways' own admission they are losing \$50 million a year to keep in effect cheap competitive rates in order to keep them from being crowded to the wall by other carriers, and they have lost another \$70 million a year in business to them. "This means that without this competition the shippers concerned, of whom the great majority are in the central provinces, would be called on to pay normal rates very much higher than those now in force. There is nothing in their case that can be called hardship." Western shippers are apparently willing to pay the higher general rates allegedly forced up by losses occasioned by the Crow rates. "On the whole," declares the Commission report, "no justification can be found for the statement that the exemption of the Crow's Nest rates causes an undue burden upon shippers as a whole, or on any particular class of shipper."

Concern about the railways is dismissed by the Commission in a short paragraph quoting the railways' own admission, "since 1922 the greater burden of the Crow's Nest rate deficiency is borne by other shippers." And so, if parliament heeds the Royal

Commission, the position with regard to the Crow rates will be preserved.

THE first charge laid upon the Commission by the government was to report whether certain sections of Canada which suffer from economic, geographic, and other conditions are adversely affected by existing freight tariffs, and to recommend measures to end it. It is quite important to put this in the forefront because the Board of Transport Commissioners has always declared itself powerless to make allowances for natural disadvantages suffered by any region. It is not, and was not intended to be a planning board. It harps on its one string—to determine "fair and reasonable rates," and in recent years the requirements of the railways have tended to become the sole test of what is fair and reasonable.

The prairie provinces have long contended that they were heavily handicapped by their specialized production of low value goods which have to be shipped across the barren expanses on their flanks to distant markets. As there is no water competition, and truck competition is rudimentary and not suited to the carriage of bulky, long haul goods, the West is a non-competitive transportation area. The national policy of east-west railway construction, fortified by the tariff, forces the West to buy its supplies in a distant protected market, whereas it might otherwise have the choice of a cheaper market closer to home. As this disadvantage has been imposed by national policy, it should be the concern of national policy to afford some relief.

At one time this was recognized and there was a definite effort made to equalize freight rates, East and West. The rate changes of the last few years, however, have increased the disparity. Equalization has become a conveniently forgotten ideal. Horizontal increases, competitive rates, agreed rates, transcontinental rates, and many other features of rate making have put western shippers in a steadily worsening position.

Let us take a look at some of these specific rate problems. One feature most roundly denounced by the West is that of horizontal rate increases. A simple example will explain. Let us assume that before a rate increase is put into effect a short haul shipper pays \$10 to get his product on the market, and a competitor who has further to ship pays \$20. The difference between their shipping costs is \$10, which we assume the long distance shipper is able to bear. Now if a 50 per cent rate increase is allowed, the short haul shipper must pay \$15, and the long haul shipper \$30. The difference between their charges is now \$15. While the same percentage increase has been applied to both of them the long haul shipper is \$5 worse off.



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THE Commission report quotes an instance of a 5th class, Schedule A rate charged in the East of 32 cents for a distance of 170 miles. A western shipper who may have to transport his goods, say, 750 miles in order to compete would have to pay 93 cents on the comparable rate. After the application of the 21 per cent, and the 20 per cent rate, compounded, the eastern shipper must pay 47 cents, but the western shipper now has to pay \$1.36! By the application of a rule which the C.N.R. describes as "the only satisfactory way of dealing with rate increases and distributing the burden equitably" the western shipper is soaked 28 cents per hundred more of an increase than his trade rival. The western shipper knows better than to accept the C.N.R. dictum. He knows that horizontal rate increases disturb business relationships and accentuate the disparity between East and West.

Here is what the Royal Commission has to say on the subject: "The position of the shipper outside the central region is bound to deteriorate with the continued operation of horizontal rate increases . . . which become more burdensome as they spread out from the shorter to the longer distances." "The railways should be able to plan, and should have planned their applications accordingly" (by the establishment of maxima, and the process known as tapering, by which long haul shippers are not disadvantaged). "If the railways do not approach the task in this way, it ought to be the duty of the Board to see that they do so." "The answer lies mainly with the railways since the cause of dissatisfaction lies within their own initiative. In this regard railway management in the past has often proceeded in fixing freight rates without sufficiently considering the interest of the community to be served, and without even showing a proper conception of the long run interest of the railway."

WHENEVER a Canadian railway finds itself losing business to some other form of transportation, it is empowered by the Railway Act to publish a competitive rate, that is a lower rate, which may not even pay for the cost of the service, but which is calculated to recover or hold the business.

The western provinces contend that the Board of Transport Commissioners allows the railways too free a hand in establishing competitive rates; that the rates are allowed to remain in effect after the conditions which caused their publication have disappeared; that competitive rates are not always advanced when general rate increases are ordered; and that the loss borne by the railways through the operation of competitive rates are recovered by charging higher rates on long haul traffic in the non-competitive area of the West.

The Commission must have been impressed by the evidence for it recommends that when railways publish a competitive rate henceforth they must provide the Board of Transport Commissioners with a volume of specific detail which will give that body a closer grip on the practice.

TRANSCONTINENTAL rates have long been a sore subject in the West, particularly in Alberta where they fall with the heaviest incidence. The avowed policy of the railways is to charge a rate that will meet the com-

petition of steamships which may load at eastern lake ports, travel down the St. Lawrence and through the Panama to Vancouver. For instance canned goods processed in the East can be lugged across the continent under a competitive rail rate for \$1.40 per hundred pounds. But if they are hauled off the car at Edmonton the shipper must pay \$2.65. The long haul rate is so much lower than the rate from Alberta to the coast that Alberta canned goods cannot make their way into the Vancouver market. This is only one of many commodities affected.

A similar situation in the United States resulted in a regulation whereby the railways were forbidden to charge a transcontinental rate lower than the rates between intermediate points. It is realized that a similar move in Canada would bring about a cancellation of some transcontinental rates, and a consequent loss of revenue to Canadian railways. Albertans do not ask for such a drastic change. They do not object to paying more for the shorter haul, but they contend that the spread between the standard rate and the transcontinental rate is unreasonable, in view of the profit which the railways claim to make on some transcontinental rates. That province puts forth a suggestion that rates to intermediate points shall not be more than one-third higher than the transcontinental rate.

The Commission has thought so well of the Alberta proposal as to put it forward as a recommendation to the government with this observation. "It is a simple and logical solution to the matter, one that is readily calculated and easily applied. It should also have a restraining influence on the railways in lowering rates to meet sea coast competition, because they will know they can only obtain rates at intermediate points not more than one-third above the rate to the sea coast."

SPACE forbids reference here to the many other inequalities of which the western provinces complained and the conclusions of the Commission thereon. It must suffice to say that they were all thoroughly ventilated and that the Commission pursued the ideal of equalization with refreshing determination.

Apart from the treatment of matters of contention between the central provinces and the outlying parts of Canada, the Commission expressed its opinion on other transportation matters which find Canada sharply divided. It opposed the idea of public ownership of the C.P.R. advanced by Prince Edward Island. It rejected the plan of capital reorganization of the C.N.R. put forward by its president, Donald Gordon, but substituted therefor a compromise scheme which will provide a start on an undertaking long overdue. It blocked the effort of the C.P.R. to prevent appeals from decisions of the Transport Board to the governor-in-council. It also rejected the advice of Manitoba calling for closer control of the Board by the government.

The Commission disapproved of one proposal of the C.P.R., the effect of which would be to determine the capital worth of the C.P.R., to agree on a fair rate of return on the investment, and to publish freight rate schedules which would provide it. In making this decision the Commission observed that a similar effort in the

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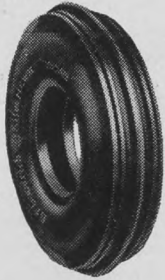
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United States had failed; that the Transport Board has a duty to the public as well as to the railways and that the two duties might conflict in a given set of circumstances; and that it is better to leave the procedure of rate making flexible rather than to put the Board in a statutory straight-jacket with respect to railway profits.

THE Commission pressed home the idea of uniform accounting for the two big rival railways so that in future rate cases before the Board everyone could speak the same language. That will end a lot of confusion.

The Commission deplored the delays in granting applications. In 1947 it was the railways which suffered from it, but in times of falling rates it might well be the shippers. The report recommends the practice of authorizing interim rate changes when applicants have made out a prima facie case. The report dealt with air, water and highway transportation. It observed that a national transportation policy seemed to be in sight in 1938, but subsequent appointment of other bodies with wide powers over these alternative means of transportation seemed to move away from the ideal of a national transportation policy.

In furtherance of its strong showing of appreciation of the western problem, the Commission report puts out a suggestion that may bear important fruit. The province of Saskatchewan had put forward a subsidy proposal based on the assistance received by shippers in the Maritimes. Counsel for two other provinces spoke about the eventual necessity of subsidies. The U.F.A. Co-op put in the suggestion that Canada is a country of two areas of civilization separated by a relative economic desert. In its view consideration should be given to a subsidy which covered the operation of the railway lines traversing that desert.

The Commission report rejects the Saskatchewan proposal but declared that the U.F.A. statement puts the problem more nearly in the proper light. "It would be suitable," recommends the Commission, "to provide that the cost of maintaining that portion of our transcontinental railway system which serves as a link or bridge between East and West be charged upon the revenue of the country. This arrangement would reduce the expense of the railways by relieving them of a liability for which at present they have to recoup themselves by means of relatively high freight charges on the traffic passing over the bridge between the two areas."

LASTLY the Royal Commission took a look at the Board of Transport Commissioners which did not escape censure. In the language of the report it has not kept close enough supervision over competitive rates; it has not compelled the railways to keep proper statistics; it has not paid sufficient attention to the freight classification; "it has not during the last 23 years taken steps to bring about the equalization between rates in the West and in the East; and it has not paid proper attention to the effect of rate increases on long haul traffic." This is not an indictment because there were extenuating circumstances, says the report, and apart from recommending that Board members should be appointed for life, it does not see any reason why the powers and duties of the Board should be changed.

The report of the Royal Commission on Transportation, 1951, is the record of a fine judicial inquiry that unties many knots which have galled the West for years, and with rapidly increasing severity. The West awaits with high anticipation the legislation which should flow from it, and which will help undo the economic centralization which has proceeded apace since the close of the war.

Larger School Area Benefits Discussed

Cecil R. Durston, Board Chairman, Dauphin-Ochre River Larger School Area No. 1 justifies larger school area organization

IN 1945, the report of the Special Select Committee of the Manitoba Legislative Assembly on Education was published. In part, the Committee commented on the larger school unit as follows: "The Committee was particularly impressed by the . . . (argument) . . . that the larger type of school unit is the only type of school organization that could provide the type of education suited to the needs of the pupils of the province as a whole, particularly of the large number of boys and girls who leave school at an early age in the rural districts, because there is at the present little opportunity for them to pursue their studies in any field beyond the purely academic."

The following year the Dauphin-Ochre River Larger School Area No. 1 was organized. A few weeks ago, during Canadian Education Week (March 4-10), Cecil R. Durston, Dauphin, Chairman of the Area Board, broadcast some of the results to date. These are presented below in the form of questions and answers.

What was the idea of forming a larger school area in Dauphin and Ochre River?

"We were not satisfied with an obsolete system of school administra-

tion," said Mr. Durston. We felt that the government would assist very little more than they were doing, until some group had enough initiative to follow the recommendations of the Special Select Committee of the Manitoba Legislative Assembly on Education, who recommended larger areas of administration, with government support up to 50 per cent of cost.

"We wanted to equalize costs over poor and good land on the ability to pay. We found that people on our low-assessment land could not keep up their schools. These were cold, the plaster was falling off, the heaters were almost done, and no painting had been done for years, either outside or inside. They could not afford to hire qualified teachers, and children were anxious to leave school at the earliest opportunity or excuse. All this happened to some of our school districts, even though they had a high special levy. On the other hand, school districts with a high assessment needed practically no special levy. Their schools were in good shape and children did not leave school.

"We wanted to equalize opportunity for the students. The high school students from outside the town had to pay tuition fees, and more than

that, if the school was full they could be barred from high school altogether. If parents could not afford to pay room and board in town, along with tuition fees, children were obliged to stay home.

"We also wanted a composite high school where we could offer more than a single, academic course," Mr. Durston continued. "In Manitoba, at that time, only seven per cent of the students entered the university, and only three per cent ever finished. At least 80 per cent did not seem interested in a university course. Why not, then, set up courses that would give them information in the fields of endeavor in which they were most likely to make their life work? With this in view we set up five courses in the composite high school: Academic, Homemaking, Agriculture, Industrial Arts and Commercial.

"If we were to have this composite high school, we needed enough school population to make it practical and economical. The district must have a population of 15 to 19-year-olds sufficient to give us a substantial capital cost grant toward the construction of a composite high school . . . \$50,000 in our case. We needed also to draw students from a sufficient area to get per capita cost grants, which amount to \$14,700 annually. We needed enough pupils (at least ten) in each technical course to give us a technical teacher grant of \$600 per teacher, plus the existing high school teacher grant of \$500 per teacher per annum. We also get a technical supply grant . . . (which) . . . amounts to \$1,800 per annum.

"We wanted more supervision from the school inspector. When the Area was formed our inspector was made Area Inspector. Now with a smaller territory to cover, he can visit each school at least four times each year.

"We wanted more reading material for our rural schools. When the Area was formed, the inspector inaugurated a circulating library, by which method the allotted books change from one school to another every two months. This gives each school access to five times the number of library books it had before."

Throughout the province a large percentage of students do not finish high school. Has the formation of an Area encouraged pupils to stay in school?

"Better rural schools and better teachers tend to keep children in schools. The rural enrollment in our high school has jumped from 45 when

the Area was formed, to 114 this year. "There are no direct tuition fees for parents to pay.

"The composite high school offers a diversity of courses which brings out the latent interests of pupils. Although new to us, these courses have become quite popular. They start at the Grade X level, and 45 per cent of the students in Grades X, XI and XII now take the four technical courses. In addition, a large number of Grade IX and academic students take one or another of the technical subjects as options.

"Making busses available for high school students enables more students to get a high school education. Parents want their children home at night, for reasons associated with supervision and finance. Room and board costs around \$30 per month in town, which compares with \$2 per family per month, so far, for bus service."

What benefits has the town of Dauphin received from inclusion in the Area?

Mr. Durston said that it would have been a real hardship for the town of Dauphin to have built and maintained a high school alone. "It would have lost about half of the capital cost grant of \$50,000," he said, and added that "there would have been no per capita grants amounting to \$14,700 derived from outside the town; the Henderson ten-room school could not have been built without the aid of \$80,000 in reserves created from all groups within the Area when it was formed; the 42 town students now taking advantage of the technical courses would have been denied this opportunity; and the large number of town as well as rural adults taking evening classes would have been denied this advantage."

Are the costs of education higher because of the larger school area?

"No, not necessarily," was the answer. "The cost of the Area is always held up as a terrible thing by those who oppose the Area plan. It should be remembered, however, that we have in our Area more children for our assessment than even Winnipeg has. This factor caused us to spend \$88,696 in 1949 on capital expenditure alone. Where the districts have their buildings, this figure would be nil, because repairs were separate and above this. Total capital expenditure for the four years of operation, 1947-50 inclusive, amounted to \$350,000.

"If we had been content with facilities already in the Area—poor

schools, barns, water supplies, desks and blackboards, and cold and crowded schools—and if we had not been alarmed at the number of children dropping out of school, our capital costs need not have risen. The Board decided to build a composite high school wing and equip it, erect a ten-room school in Dauphin, make a two-room addition to the Ochre River School, build four new rural schools, insulate 95 per cent of all schools, and equip most of them with coal heaters and coal.

"We could," reported the Chairman, "have done without visual education, but now every classroom in the Area is visited at least one half-day each five weeks, by a visual education expert. Electricity was something we always got along without in rural schools. Now all schools are wired as electricity becomes available, and over two-thirds of our classrooms have electric power. Local districts were interested in radio school programs put on by the Department of Education. The Board agreed to pay half the initial cost of radio and all upkeep, which brought radios into practically every school in the Area. The classrooms in out-of-town schools having indoor toilets have been increased from three to eleven. In addition, new sites for schools have been bought, barns erected, teacherages built, wells dug, new pumps installed, grounds improved and redecorating done.

"We could have filled our schools with unqualified teachers with salaries set by the Department, a maximum of \$1,200 per year, and saved the taxpayers a nice sum of money. However, we have a salary schedule and we started the term with all qualified teachers."

How far has the Department of Education gone in supporting the Area with grants?

"At the beginning," said Mr. Durston, "there was a capital cost grant of \$50,000. In 1949, the last year for which an auditor's report is available, the total expenditure was \$367,558.99, which included \$88,696 capital expenditure. Against this were annual grants totalling \$141,833.72, or 38.07 per cent of the total expenditure, which compares with an estimated 25.8 per cent for the province. By 1953 we will have all debts paid, except the long-term debenture on the Mackenzie School, which by that time will amount to \$20,000.

"The various grants received in 1949 were as follows: Government share of the basic grant, \$88,490.53; secondary school grant, \$6,736.50; transportation grant, \$2,613.76. These three general grants total \$97,840.79. Other grants were: an additional 20 per cent (of \$97,840.79) for being in the Area, \$19,568.16; administration grant, \$5,000; technical grants, \$3,380; per capita grant, \$11,001.39; bursary grant, \$4,593.38. These extra grants total \$43,992.93 and the two totals give a combined total of all grants amounting to \$141,833.72.

"Our prime endeavor as a Board," said Mr. Durston in conclusion, "is to keep children and students in school by making schools healthier, and pleasanter places to work in; by giving a wider variety of courses, offering better opportunities; and most important of all, by procuring the most capable, most interested, most highly trained teachers in Canada."

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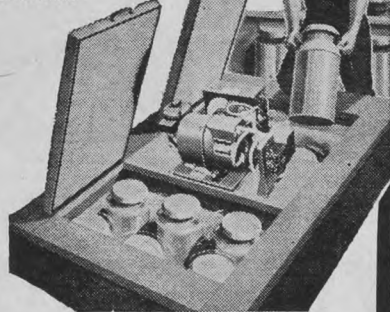
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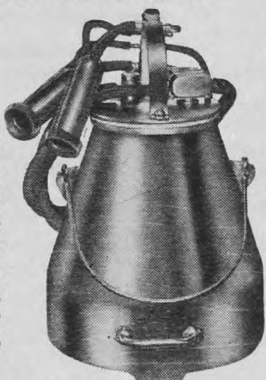
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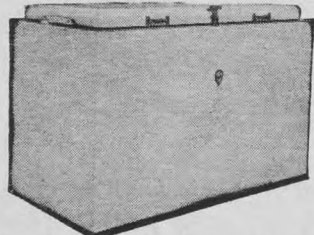
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These bring satisfaction and success to this Peace River farmer

THREE years after Eric Anderson, now of Wembley, Alberta, came to Canada from Germany he joined the Canadian Seed Growers' Association. Twenty years later he was made a Robertson Associate. If an award were available for high quality poultry production there is little doubt that, at least partly because of the loyal assistance of his wife, he would have been awarded that also.

Mr. Anderson is not a "big" farmer. He and another farmer bought a quarter-section in partnership in 1928. In 1933 he bought out his partner. It was 1947 before he bought a second quarter. He now has 280 acres broken, of which 40 are seeded down to brome.

Anderson has had the opportunity of learning a great deal about the production of good seed, and he has made the most of his chances. He worked for Herman Trelle from 1928 to 1933 and was associated with the growing and selection of world championship samples. "We had to cut the special exhibition samples by hand, and they had to be cut at just the right stage of maturity to get the ideal color," recalled Mr. Anderson. "We tied the grain in small bundles and hung it in airy sheds to dry. When it was dry we cut the heads off, put them in sacks and threshed the grain by beating the bags with sticks. We then screened it by hand through many screens, after which we picked it over by hand."

DURING these years he was growing registered seed on his own farm. He has raised some big crops. He nostalgically recalls harvesting crops of registered wheat that averaged 60 and 70 bushels to the acre. For the last ten years the crops have not been nearly so good, and of recent years frost has been a problem. Last year he grew three acres of elite Thatcher, and 90 acres of first generation Thatcher, also five acres of registered oats and 90 acres of commercial, but the value of all these crops was greatly reduced by a serious frost shortly before harvest.

Mr. Anderson is concerned with keeping his soil in good condition. He has practiced a three-year rotation of summerfallow followed by cereal crops, but is beginning to work brome grass into the rotation to reduce the danger of wind and water erosion. He uses 11-48-0 fertilizer on all seeded crops. He used 2,4-D for the first time last year and was satisfied with it, but does not wish to rely on it too much, due to the wild oats problem. One thing that he likes about pure seed production is that it makes it essential to always keep the farm clean.

"THE hatching season is our harvest," said Mr. Anderson. He and Mrs. Anderson started with Barred Rocks in 1933, later switched to New Hampshires, and in 1942 changed to a heavy strain of White Leghorns. In 1945 they started an Approved Flock, and now find that the flock of 1,100 to 1,200 birds provides a substantial part of the farm income. Until recently there was no chick sexer in the area, and two years ago they bought 2,750 chicks to produce 1,000 pullets.

Management practices have been such that production levels have been

high, and hatchability has hardly ever dipped below 75 per cent. They normally feed a laying mash, grit and a scratch feed consisting of half wheat and half heavy oats. In the winter they feed boiled wheat and additional fish oil. Most birds are kept for only the pullet year, no more than 300 being retained for the second year. They

kept records in 1947 and found that production averaged 226 eggs per hen. This level has been maintained.

When Anderson and his wife moved to the farm in 1934 the only building on it was a small shack. There were no windbreaks, and there was no road into the place. Today there is a satisfactory set of buildings, the yard is well planted, the fields are clean and top quality grain and poultry products are regularly sent to market.—R.O.H.



Eric Anderson, Wembley, Alta., standing in his plot of elite stock Thatcher wheat. [Guide photo]

Stevenson Memorial Gold Medal Award

Story of the awards made to mark the memory of a pioneer Manitoba horticulturist

IN 1874, a young, 20-year-old Scotsman came to southern Manitoba and chose a fertile farm about seven and a half miles northwest of what has since become the town of Morden. He was the late A. P. Stevenson.

Mr. Stevenson became a skilled horticulturist, whose reputation gradually extended far from his southern Manitoba home, helped by the fact that from 1900 until 1922 he spent his summers inspecting tree plantings for Norman M. Ross, Indian Head, who was chief of the Tree Planting Division, Ottawa.

When the late "Sandy" Stevenson died, on December 22, 1922, the Manitoba Horticultural Association thought it fitting that his memory and the record of his pioneer work in prairie horticulture should be perpetuated in some suitable manner. It was decided that this tribute to his work should take the form of a gold medal to be awarded from time to time to some worthy individual. Funds for this purpose were raised from pupils in the Manitoba Public Schools, from horticultural societies, some few business firms, and citizens in general. The A. P. Stevenson Memorial Board was set up and held its first official meeting in the office of the Minister of Agriculture in Manitoba, on June 13, 1925.

The constitution of the Board provides that "the Stevenson Memorial Gold Medal shall be awarded for conspicuous achievement in the field of practical horticultural species or products, which make a distinct contribution to horticulture in Manitoba."

The Memorial Board consists of five persons of whom four must approve a recommendation before it can be submitted to the directors of the Manitoba Horticultural Association for action. Since 1925, the gold medal

has been awarded only seven times, the last time to M. B. Davis, Dominion Horticulturist, Ottawa, at the recent annual meeting of the Manitoba Horticultural Association. It was worthy of note that present on this occasion was the late Dr. H. M. Speechly of Winnipeg, who was chairman of the committee first appointed to develop the memorial award.

THE following review of the seven gold medals issued to date was prepared by W. R. Leslie, superintendent of the Experimental Station at Morden, who comments that "each of these seven recipients is recognized internationally as an unusually successful breeder of improved, hardy, garden plants. Each of them has brought direct benefit to prairie gardeners." These have been the recipients:

F. L. Skinner, Dropmore, Manitoba: presented on the Stevenson estate, Pine Grove Farm, near Morden, afternoon, May 24, 1932. Dr. Skinner came from Scotland as a lad and always, through the intervening years, has been a devoted, adventurous plantsman.

N. E. Hansen, Brookings, South Dakota: at the Dominion Experimental Station, Morden, afternoon of August 25, 1935. Dr. Hansen, Professor of Horticulture, plant explorer, and prolific breeder of new plants, migrated from Denmark to the New England States as a boy, then moved to Missouri, Iowa and South Dakota. A large proportion of prairie tree fruit varieties came from his bold, fruit-breeding industry.

G. F. Chipman: posthumously, on the Chipman Fruit Farm, St. Charles, afternoon, June 3, 1938. His best known plant achievements were with rhubarb, muskmelons, cherries and plums. As editor of The Country Guide he supplied the first fruit trees

to hundreds of prairie farm gardens. N. M. Ross, Chief of the Tree Planting Division, Indian Head: at the Manitoba Horticultural Association convention, Winnipeg, evening, February 13, 1941. Among his achievements were a pillar rose, a large gooseberry and delphiniums. He migrated from Scotland as a young lad. During 40 years he guided prairie shelterbelt planting.

W. H. Alderman, Professor of Horticulture, University of Minnesota: at the first annual meeting of the Western Canadian Society of Horticulture, Winnipeg, evening, November 9, 1944. A leader in progressive horticulture since a young man in his native New York State, Professor Alderman has introduced many superior varieties of tree and berry fruits.

Wm. Godfrey, head gardener and rose breeder (at Morden-Ed.): at the Great Plains section of the American Society of Horticultural Science, summer meeting, Morden, Manitoba, morning, August 25, 1947. Among his accomplishments are numerous superior hardy roses, and the Morden pink lythrum.

M. B. Davis, Dominion Horticulturist, Ottawa: at the annual banquet session of the Manitoba Horticultural Association, Winnipeg, evening, February 15, 1951. New valuable plant varieties adapted to the prairies bred by Mr. Davis and his assistants run into scores. Included are strawberries, raspberries, gooseberries, currants, cherries, plums, apples, pears, lilies, lilacs, roses, Rosybloom crabapples, peas, tomatoes and sweet corn.

All-America Selections in Alberta

Two vegetables and a flower find varying receptions in the northern Alberta climate

by R. J. HILTON

WHILE the 1950 growing season at the University of Alberta cannot be said to have been ideal by any means, nevertheless, careful attention to vegetable and flower trial plots has resulted in comparative test-records that should be of some interest and value to gardeners in the province.

Of particular interest, perhaps, were the tests on the 1949 All-America horticultural selections, seed of which was first available to the gardening public in the spring of 1950. There were only three new horticultural plant varieties so honored in the 1949 All-America tests at Pennsylvania State College, and these were: petunia "Firechief," snapbean "Topcrop" and bush squash "Uconn." All these were given a careful trial last summer.

The most outstanding of these new varieties was the Uconn squash. This tiny newcomer to squashdom was developed at the University of Connecticut, and though the "bush" type of plant is a distinct advantage in culture and as a space-saving feature, the plants, at first, were not impressive. The fruits seemed disappointingly small, and the immature fruits were covered with stiff hairy glands. As the fruits matured, however, these glands disappear and the dark green, acorn-shaped squashes take on a bright sheen, together with a suggestion of yellow overcolor.

In storage, the yellow color develops rapidly until the fruits are entirely a rich, golden yellow, or nearly so. The small size (one to two-and-a-half pounds) tempts one to be critical, until the fruits are cut in preparing them for the table. Then it is seen that the skin is very thin, and a two-pounder of this variety makes an ample vege-

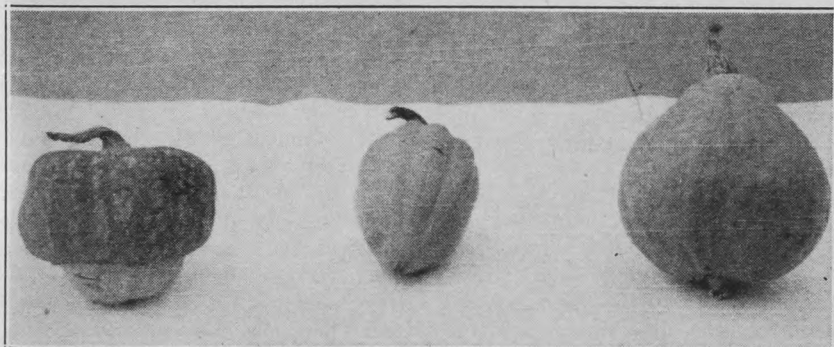
table dish for the average family.

The best part about the Uconn squash is its high quality. It is very good indeed, according to a panel of critical palates at the university horticultural division. It is certainly good enough to warrant widespread trials, and may indeed win over to the ranks of squash lovers many hitherto lukewarm or undeveloped taste buds.

The Topcrop green-podded bean gained many favorable comments this summer, too, chiefly because it remained free from string and fibre for a long time after the pods were large enough to harvest. Even when the seeds had developed nearly to full size the pods would still break cleanly and with every indication of tenderness. The yield was above average, though not the highest by any means. Seed of this variety was readily field ripened at Edmonton, so lateness is not a factor.

Cooking tests at the University of Alberta disclosed a character that deserves comment. This is that although the pods do not develop stringiness or fibre when overmature, nevertheless they do require considerably more cooking time to make them reasonably soft, than would be the case if they were harvested when they had just grown to full length. Even with the extra cooking time, however, the product was bright and very attractive. Flavor was generally rated as "good."

The only disappointing one of the three All-America selections was the Firechief petunia. Under Edmonton conditions in 1950 the bright red color that was so publicized just didn't develop. The blossoms were red all right, but in a dusty off-salmon shade that was not particularly attractive and certainly not outstanding.

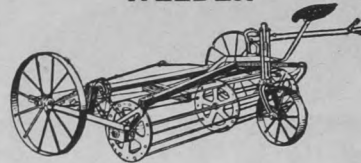


[Univ. Alta. photo]

Three good winter squash: Left, Buttercup, a vine-type, turbaned, variety of good quality; center, Uconn (1950 All-America Award), bush type, excellent quality; right, Baby Blue, good quality, bush type, smaller than Blue Hubbard.

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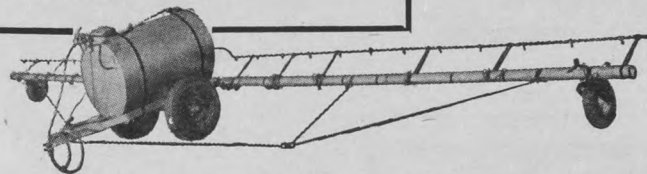
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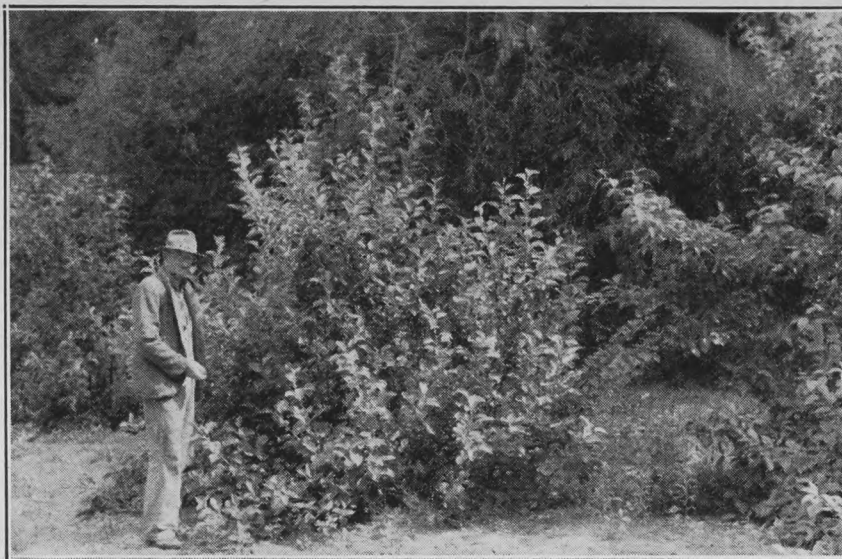
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F. E. Wilson stands beside a well-shaped young tree, which branches right to the ground.

A Half-Century on the Farm

*Like many other transplanted Scotsmen, this
Saskatchewan farmer stuck to one location*

WHEN F. E. Wilson first came to the Moose Jaw area in Saskatchewan, the population of Moose Jaw was about 1,400. His post office is Caron, and his place is easily recognizable by the dense growth of trees in and around the farmstead, which is reached shortly after turning north, about 11 miles west of Moose Jaw on the way to Caron.

When I visited Mr. Wilson he had been on the farm for 50 years, ever since coming out from Scotland. Now, he says, he is about the only original settler left in the neighborhood, although there are some of the second generation living on original homesteads.

Near the buildings is an orchard which has given Mr. Wilson a great deal of satisfaction in past years, but which now is suffering from some neglect. Both his sons were laid up at the time I saw him, and, though lame, he had been forced to do some farm work to keep things going.

The soil on the farm varies to a considerable extent. The ten or twelve acres where the orchard is located has a water table close to the surface, and on this sandy piece it has never been necessary to irrigate; nor has there ever been a failure for lack of water. Moreover, once the snow falls among the trees it cannot get away, and is responsible, I have no doubt, for protecting semi-tender trees as well as for providing extra moisture. It must lie fairly deep in the orchard, because I noticed some dead tips of branches on a few trees at varying distances

from the ground which, Mr. Wilson said, were caused by a hungry porcupine a year ago.

The garden is located near the house, and is irrigated. There was also some sub-irrigation under the flowers growing along one side of the house. In the center of the garden was an interesting looking weeping birch which Mr. Wilson had pruned to give it an open center with a fringe of drooping branches.

MR. WILSON admitted to being something of a crank on alfalfa. He must have begun growing it

shortly after he homesteaded, because he said he had tried everything, and finally obtained three small packages of Siberian alfalfa, semi-palatinsk. This seed he multiplied with some difficulty because the seed ripened somewhat unevenly and tends to shatter. He has obtained as much as 65 pounds per acre by waiting until the first shattering occurs, but says he probably loses some seed at the end also.

He is still growing some of this alfalfa, a very small-seeded, yellow-flowered, persistent type, which forms a very dense mat of stems and leaves. It spreads and roots deeply, but not as deeply as ordinary alfalfa. It can be crossed with the darker-flowered kinds, and in a paddock south of the orchard I saw many plants with flowers of different color combinations. Mr. Wilson said that he had one piece of this alfalfa down for 23 years and nearly always got three cuttings from it. Its persistency was demonstrated by some tiny plants I saw scattered over a paddock next to the barn on the north. Thirty-five years ago he had thrown a shovelful of a mixture of this seed along with chaff and dirt, out into the paddock. Some of the seed struck root, and despite the fact that the cows leaving the barn never give it a chance to reach any height, it is still there.

Though the soil on the farm is variable, some of it has been quite productive. The field south of the orchard has yielded up to 60% bushels of wheat per acre, and another piece of wheat on fallow, the first after breaking, Mr. Wilson thought had yielded one year nearer 70 bushels.—H.S.F.

Off the Beaten Path

Odd items from here and there, curious and otherwise

AN eastern North Dakota farmer thinks that the old adage "make hay while the sun shines" is too old-fashioned. He starts haying when the first blooms appear on sweet clover, using a 12-foot swather and leaving an eight or nine-inch stubble. A mower can be used if the side-delivery rake follows immediately. Once the hay is in the windrow he does not touch it again until it is ready to bale, even in case of rain, and if rain comes during haying operations the work goes on. He leaves the sweet clover nine to fourteen days to cure, until all the original plant moisture is cured out. Then, he lets it pick up atmospheric moisture before bailing, so as to have the hay a bit tough in order that no leaves will shatter.

In his area the sun draws moisture from about 10 a.m. to 4 p.m., and baling is never done then. Humidity builds up during the remainder of the day, and by 9 p.m. well-cured sweet clover is ready to bale. He takes the hay from the field baler to the barn for about three hours; then leaves further bales on the ground to be dried by the next day's sun. If the weather is cloudy and muggy, he can work all day.

SOMETHING new happened recently when Dutch strawberry growers began giving their strawberries a short-day treatment, covering the plants with dark glass in the afternoon and uncovering them at eight o'clock the following morning. By this means, Dutch strawberries are

reported to be yielding two crops a year. Perhaps it was as a result of this scientific stepping up of strawberry production that 66 tons of frozen strawberries were shipped from Rotterdam to California some time ago.

A FLOURISHING duck industry has arisen in the Philippines because of a duck egg delicacy unknown to the rest of the world. The name of the delicacy is "balut," which, in brief, is unhatched duckling. It is said to be as popular in Manila as hot dogs in the United States and Canada. Millions of these eggs are sold by peddlars every year along the streets of the city.

When almost ready to hatch, the duck egg is removed from the incubator and hard-boiled in the shell. The custom of eating these eggs must be centuries old. One of the villages, named Pateros, was so named by the Spaniards because of the large number of ducks found there at the time of the Spanish conquest. It is still the principal business of the village, the name of which means duck-raisers. The duck industry is made possible and economical by a fresh-water lake, containing almost unlimited amounts of snails and other aquatic duck food. A non-broody duck, similar to the American mallard, has been developed which is found in flocks. They sometimes average 150 to 180 eggs per bird. The ducks conveniently lay eggs the year around, seldom stray from their pens, and are put into bamboo enclosures during the night.



Mr. Wilson in his seed plot of Siberian (semi-palatinsk) alfalfa.

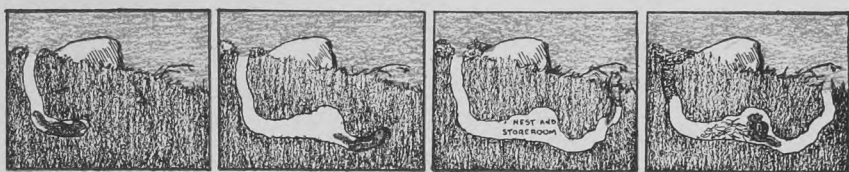
The Country Boy and Girl



WHEN a carpenter gets ready to build a house, the first thing he does is to look at the plan or "blueprint" to see just how the house is to be laid out. Wild creatures also go about planning their homes in the same way. The paper nest of the wasp, the mud castle nest of the cliff swallow which you have found under the eaves of the barn and the home of a skunk family with its network of tunnels, are all carefully planned before the builder goes to work.

The chipmunk is a clever builder who plans his home to fool his enemies. How does the chipmunk dig a hole without leaving any earth around it? First he digs a tunnel down into the ground for about three or four feet and then makes a little room which he will use for a nest box and a place to store his food. Then the chipmunk continues to dig on and up as you see in the diagram and digs out a very small hole in a clump of grass which will hide it from sight. Now he takes the loose earth and pushes it up into the first tunnel in order to plug it up for about two feet of its length. On the ground you may find a little pile of loose earth and expect to find the hole from which it was dug, but the clever little chipmunk has hidden the real door to his home sometimes many yards away.

Ann Sankey



The Train Adventure

by Mary Grannan

IT all began that morning in the springtime, when Patty and Paddy Peterson boarded the train at Littlevale. They were going to visit their grandmother in the city, and they were very excited, and they felt very important. This was the first time that Patty and Paddy had travelled alone.

Patty laughed as she settled herself in the deep green train seat. "Isn't it lovely, Paddy? Paddy, I feel that we're going to have a great adventure on this train."

Her little brother laughed too, as he said, "Patty, you're always looking for adventures. I think just travelling on the train is adventure enough for one day."

"Oh, I do too," agreed Patty, "but just the same I'm going to have a big train adventure. I know I am."

The conductor came along before Paddy could answer Patty. The conductor knew the children, and talked to them for a few minutes. As he was about to go on, Paddy said, "Conductor, Patty thinks she's going to have an adventure on the train. Do you think she is going to have one?"

"Well, now," said the trainman, taking off his hat and scratching his head in thought, "I don't know, but I will tell you this: there are some circus folks up ahead in the second car from here. There are some circus children with them. Patty might call it an adventure to talk to circus children."

"Oh, we both would, sir," said Paddy. "What kind of circus people are they? Are there any lion trainers, and acrobats up ahead?"

The conductor nodded. "Lion trainers, acrobats, cowboys and a snake charmer. You go along and see them. Go through the sleeping car next to this one, and then into the lounge car. You'll find them there."

The children thanked the conductor and made their way into the next car.

By one of the berths, they noticed a tall pair of leather boots.

"Cowboy boots!" said Paddy.

"And one of them is moving," said Patty. "Look, it's dancing all by itself. Do you suppose it's a magic boot?"

Paddy turned up his nose at Patty's suggestion. "A magic boot! Of all the silly things to say. The train is lurching. It's moving the boot. Can't you see how we're almost staggering ourselves?"

"Yes," said Patty, "but why doesn't the other boot move, too?"

"Oh never mind that," said Paddy. "Come on."

They were just entering the next car when they heard a woman scream. A trainman came running toward her. "What is it, madam? What is wrong?"

"Rosie!" she cried. "Rosie is gone."

"Who is Rosie, Madam?" asked the trainman. "Is she your child?"

"No, no!" screamed the woman. "And she must be found. She is poisonous. If she stings anyone it will be dreadful. How did she escape without my seeing her? She is a snake. Rosie is a rattler! I carry her in this basket," and the woman pointed to a basket on the floor by her feet. "I am the snake charmer with the show. You must give out an alarm to everyone to look out for Rosie."

The trainman told the snake charmer that she had no right to endanger lives, by carrying a poisonous snake about with her. That lady answered by saying that she knew he was right, but that lives were in danger and that Rosie must be found, and right away.

Patty and Paddy, wide-eyed, had heard all that had been said. As Patty slipped her hand into Paddy's, her eyes brightened, and she called out. "I think I know where Rosie Rattlesnake is hiding."

"Patty," said Paddy. "Be still. You don't know any such thing."

"But I do," said Patty. "The boot! The tall boot that was wiggling. I'm sure Rosie is in the tall boot in the next car."

Rosie was in the tall boot. The snake charmer, who knew how to handle Rosie, had her back in the basket in a few minutes.

Everyone praised Patty for her quick thinking, and the circus people, gave her three tickets to the big show that would be showing in the city, at the end of the week.

Back in their deep green seats, a little while later, Paddy looked at his little sister.

"I'm sorry I laughed at you, Patty, a little while ago. You were right. We did have a great train adventure."

Sketching from Life

Part VIII of Series

by Clarence Tilenius

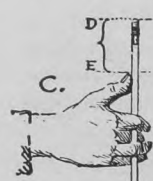
THE hardest thing about sketching people from life is to know where to begin. You may well take this as your rule: *Begin with the head.* Once you have decided on that, you use it as your unit of measurement, regardless of what pose the figure is in. You can figure your drawing to be so many units (or head lengths) high.

To measure, hold the pencil between your fingers as at C. With your arm straight, and one eye closed, slide your thumb up the pencil until the space D-E just covers the head (bottom of chin to top of head). This will now be your unit of measurement. Swinging your arm down until the pencil top is in line with the bottom of the chin gives you your second unit. Keep on until you have the whole figure divided into so many head lengths. If you want your drawing 12 inches high, and the seated figure contains six head lengths, you will mark off on the paper, six equal lengths, two inches each, exactly where you want the drawing to come.

First of all, block in roughly the shape of the head, making sure it is in the right place, which you have already marked off on the paper. Now, indicate with straight lines, and very lightly, the main outlines and divisions of the figure as in B. When these are down, and roughly correct, the drawing begins to take shape.



THE HEAD BEFORE YOU BEGIN TO DRAW.

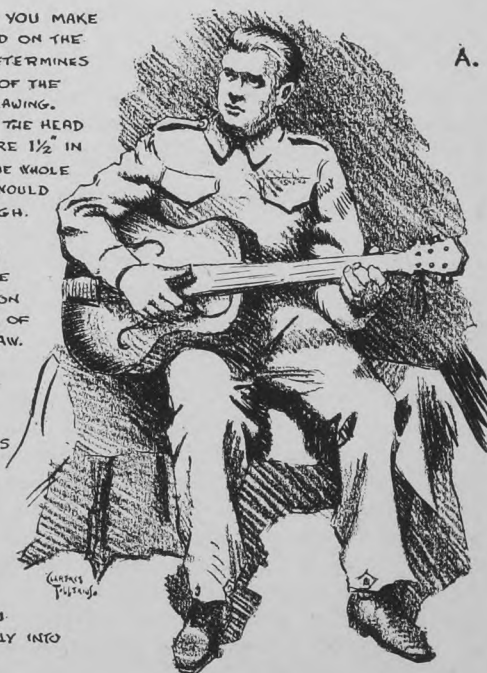


MAKE MEASUREMENTS ON YOUR PENCIL AS AT C. THE ARM IS HELD STRAIGHT AND SWINGS FROM THE SHOULDER.

THIS WILL ALLOW YOU TO DIVIDE THE FIGURE ROUGHLY INTO SO MANY HEAD LENGTHS.

THE SIZE YOU MAKE THE HEAD ON THE PAPER DETERMINES THE SIZE OF THE WHOLE DRAWING. THUS, IF THE HEAD (D-E) WERE 1 1/2" IN LENGTH, THE WHOLE DRAWING WOULD BE 9" HIGH.

YOU MUST THEREFORE DECIDE ON THE SIZE OF



Keep this always in mind: when you are sketching, you look only for the shapes of shadow, and draw with as long and as straight lines as possible. Your aim must be to get as accurate a statement of the main divisions of light and shape in as few lines as possible. All beginners use too many lines. Wherever you have a large area of shadow to be filled in, use the flat side of the pencil lead. And by the way, use a fairly soft black pencil, say a B or 2B when sketching. It responds to the hand better than a hard pencil. Another thing: do not rub out lines, even if they are wrong. You draw through them; and in this way you learn to draw very lightly at first until you are sure that the outlines are correct. Erasing will only leave a mess. Even the greatest draughtsmen do not always put down the correct line at the first go. If it is wrong, they simply draw the right one through it. So take heart, you will get it yet.

Fun with Numbers

ASK two people to write on separate sheets of paper a number containing three numerals. They may use any number they wish but neither is to see the other's number. Then give them the following directions:

	First Person	Second Person
(The numbers chosen)	982	761
1. Reverse the numerals	289	167
2. Subtract them from the first number	693	594
3. Reverse the numerals in the new numbers	396	495
4. Add them together	1,089	1,089
5. Add 100	100	100
	1,189	1,189

When they have finished their numbers, ask them to fold up their papers and exchange them. When they open each other's paper they will be surprised to find that although they started with different numbers they now both have the same answer and you will find this will always work out to 1,189.—A.T.

THE *Country* GUIDE

with which is incorporated

THE NOR'-WEST FARMER and FARM and HOME
Serving the farmers of Western Canada Since 1882

VOL. LXX WINNIPEG, APRIL, 1951 No. 4

The Railway Commission Report

The report of the Royal Commission on Transportation, released by the prime minister on March 15, is for the West one of the most important documents of our time. It is the first official utterance which recognizes with clarity, and condemns with emphasis the undue burden thrust upon the western provinces for maintaining the nation's rail transportation system. Just how far it has gone in germinating ideas which will distribute the cost of providing rail services equitably among the different economic areas of Canada remains to be seen.

The report leaves no doubt that the outlying areas of Canada have been discriminated against in the framing of tariff schedules. In applying for rate increases the railways have followed the line of least resistance and taken their growing income requirements from the non-competitive area between the Great Lakes and the Pacific, and the Board of Transport Commissioners have come in for criticism for repeatedly permitting this practice. The Royal Commissioners declare that the Board already has sufficient power under the Railway Act to correct the major inequities under which the western provinces labor. In the face of this criticism shippers can expect to see a thorough overhaul of the whole freight tariff structure of the country at an early date, which will enable the roads to collect a bigger share of their revenue from areas now heavily favored.

Answering a question in the House, Mr. St. Laurent promised that parliament would no doubt be presented with legislation growing out of the report at its present session. Whether the government will limit its activity to making the minor changes in the Railway Act suggested by the Commission, or whether it will roll up its sleeves and tackle the job of granting relief in the form of a subsidy paid to the railways to cover the cost of long-haul traffic, as suggested in the Commission report, is a matter of speculation. When debate on the estimates of the Transport department takes place in the House, western members will doubtless press this case to conclusion.

The \$65 Million Payment

Those who have followed the course of public opinion with regard to the \$65 million payment from the public treasury as compensation to wheat growers for the loss sustained under the British wheat agreement must be sensible of a degree of hostility toward that settlement in eastern Canada. This is not to be wondered at because eastern Canadians have had it represented to them as a bonus to the wheat grower. Of course it is nothing of the kind. The wheat farmer has never asked for or received a bonus on his product. Indeed he belongs to the one large class of people which is regularly taxed, directly or otherwise, to pay for the bonuses received by others.

Wheat growers will allow for an honest difference of opinion as to what the treasury should pay in compensation, or whether it should pay anything at all, but they cannot overlook some of the reasons advanced in support of those opinions. For instance in the lively Senate debates of March 19 and 20, Senator Pirie, who represents a New Brunswick lumbering constituency, which sold third grade lumber at \$100 a thousand during years when wheat was selling for \$1.55 a bushel, declared that he would not support the payment because it bonused wheat farmers whereas the potato growers in his province were selling their 1950 crop for less than the cost of production, and when they asked the government for a bonus, they were refused. Senator Pirie professes to see no difference between growers handling their own commodity and running

into a bad market, and the position of the wheat growers who are obliged to hand their marketing over to a government agency which, by virtue of a government contract, sold their product for less than its market value. His acumen does not do justice to the important positions he holds inside and outside the government of Canada. Or else he is just talking for political effect.

Indeed the \$65 million cannot be entirely regarded as compensation for the adverse effect of the British contract. A common estimate, for which The Guide takes no responsibility, of the aggregate loss under the five-year pooling arrangement is \$330 million. It is fairly well agreed that of this amount \$48 million was lost through the sales of domestic wheat below the market price. Under the law the farmer was obliged to bonus domestic consumers of flour to that extent. In the view of Senator Beaubien, which makes sense, \$48 million of the sum which the government will pay on the five-year pool losses is a return to wheat farmers of the bonus they were obliged to grant to the citizens of Canada; in reality the \$48 million is an indirect subsidy to flour consumers. The remaining \$17 million is therefore what the government is asking the farmers to take as settlement for a sum which was said in the Senate debate to be \$330 million less \$48 million, or \$282 million. A six per cent compensation settlement can in no way be regarded as a handsome bonus, which the eastern Canadian is asked to believe.

Stepping Out of Character

There are two diametrically opposed opinions about Gen. Douglas MacArthur. Outside the United States there is a general tendency to criticize what is regarded as an effort on his part to involve the United Nations in a major war. Many Americans, however, regard him reverentially as the hope of the free world, and rush to brand his mildest critics as agents of Moscow. Perhaps The Guide may escape the latter if it stops a little short of the former.

The debate as to whether MacArthur should have stopped at the 38th parallel continues ad nauseam. The simple military truth is that no body of troops engaged in active operations can stand on any hypothetical line. A fighting army must select positions which will ensure the maximum security against overwhelming attack. The statesmen cannot fight Gen. MacArthur's war for him, and they have wisely given him the broadest directives. He may occupy any portions of North Korea essential to the security of his forces. He may go to the Yalu river, and he may even move into China to break up impending attack, although Secretary of War Marshall brands that as an extreme measure.

If it is true that the men around the table at Lake Success must not interfere with military operations, it is also true that Gen. MacArthur is not at liberty to conduct diplomatic exchanges. A commander in the field cannot be informed on all the points which have to be weighed in planning grand strategy. Perhaps in the days of simple issues and small professional armies commanders in the field might be given wide discretion in negotiations with the enemy. In these days full scale war embraces the whole nation. The effort which it requires reaches down to the humblest citizen. Obscure and conflicting interests of potential Allies and enemies have to be kept constantly in mind. In democratic countries generals must stick to their assignments and leave the talking to the men who have to answer to the people.

Most Canadians will applaud the statements of Hon. Lester B. Pearson at Toronto on March 31 who, without naming anyone, inveighed against UN military men who make controversial statements that go far beyond their military responsibility and create confusion, disquiet and discord. At the time of President Truman's precipitous flight to Wake Island to meet Gen. MacArthur, it was generally understood that responsibility was clearly delimited. The general's latest excursions into the realm of policy show this not to be so sure.

The many nations represented in Korea are proud to be associated with the world's greatest nation in the defence of freedom. Carefully nurtured, the bond between them will stand any strain. We can think of nothing that will destroy it more quickly

than field commanders who are not subject to orders from home. And in the making of those orders the smaller nations must be given some voice.

Charitable Appeals

The Ontario government has moved with commendable determination to inquire into the alleged irregularities committed by persons collecting money from the public for charitable purposes. The present flurry was touched off last December when the Financial Post published an account of the operations of the Polio Foundation, which had collected \$289,000 up to November 30, of which sum only \$72,000 had been spent in the relief of polio, whereas \$140,000 had been set aside for organization, or to put it less politely, for the organizers.

The same periodical published in its March 31 issue a record of the United Emergency Fund for Britain, an organization which folded up very quietly last year after having collected \$593,000 from the public in small donations. The total income of the organization in its two years of active life, and including government grants, is revealed by the auditor's statement as \$759,644. Of this amount only \$880 was spent on food. Some other interesting items are: salaries, \$185,000; traveling, \$78,000; advertising, \$188,000. There is no allegation of a direct steal. It is merely stated that the original purpose of purchasing food and clothing for despatch to Britain was changed, without notifying donors, to a policy of encouraging others to do so, and that this activity was carried on by a well paid publicity firm operated by the chief administrator of the fund. As in the Canadian March of Dimes case the originators seem to have received their business training in the stock promotion field.

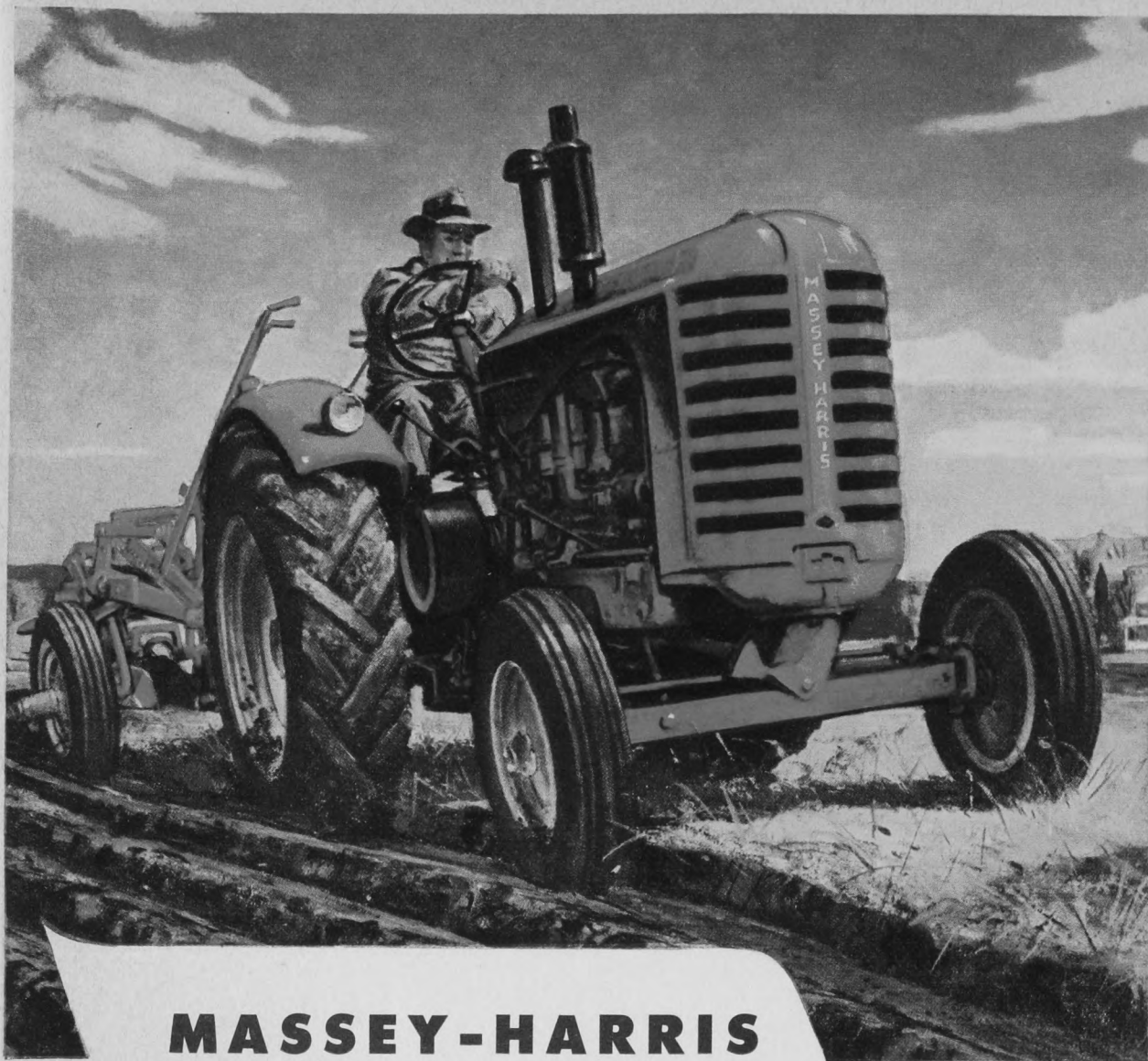
As matters now stand any group of people may make a public appeal for funds for any purpose whatever. They may do what they like with the receipts, and are not obliged to make a public accounting. There are many fine charities in Canada which have used their income in accordance with the highest standards of trust. Every exposure of this nature lessens confidence in charitable organizations as a whole and increases the difficulty of the reliable ones.

The Bell Tolls Again

It is a long cry from the readers of the public prints in rural Canada to the fortunes of a daily paper in Buenos Aires, but free men in every part of the world must sense a defeat for their cause in the fate which has overtaken La Prensa. This Argentinian daily was one of the few great newspapers in the world. From the day it first opened its doors it expressed its opinions fearlessly about the political comedy that seethed about it in Spanish and Portuguese America. Over the years it built up a tradition of thorough news coverage, cultural leadership, and courageous editorial writing. Its palatial offices contained everything that conduced to the well-being of its employees, from whom it received in return a loyalty that has since cost them dear.

But La Prensa made the mistake of speaking plainly about Argentina's current dictator Col. José Peron, his actress wife Evita, and the boisterous clique they have gathered about them. Threats failed to silence La Prensa. The initial moves of the government to hinder publication fared no better. The paper ceased publication for a time because of outrageous demands of distributing agencies to share in the advertising revenue, a thinly disguised move engineered by the administration. When La Prensa's own employees endeavored to start the wheels rolling again a Peronist mob attacked them at work, dealing death and destruction. What the mob failed to do, the government police completed.

The most powerful voice in Spanish America on the side of free speech is dead, its editor in hiding, its staff scattered or in jail. Step by step the Peron crowd have filled out the pattern of dictatorship, with protestations of greater freedom, of course, and with trimmings different to what Hitler, Mussolini and Franco employed to garnish their audacity. But the free world recognizes the technique and awaits the inevitable conclusion.



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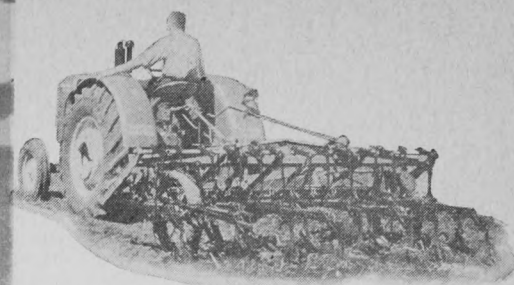
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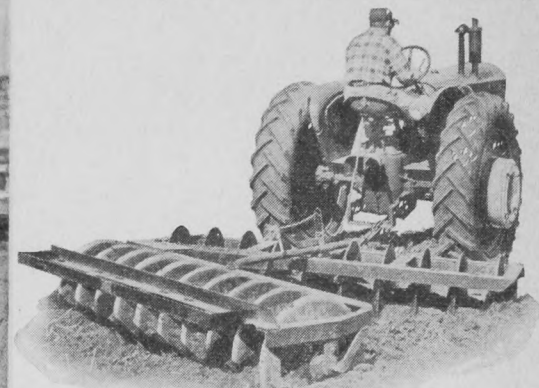


A WORLD WIDE ORGANIZATION



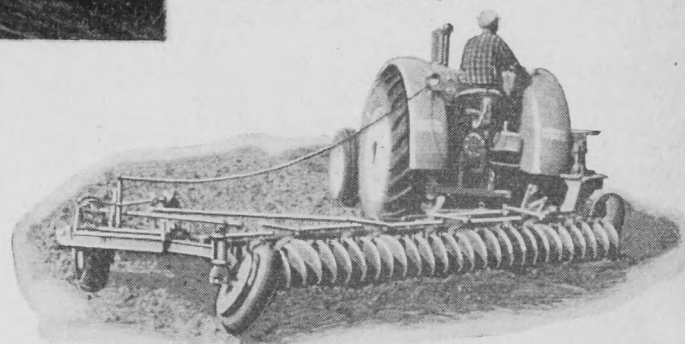
Cultivates at 5½¢ per Acre

Everett Tufte, Chauvin, Alta., says: "On \$130 worth of diesel fuel, my M-H 44 Diesel did ¾ of the total work of raising 440 acres of crop and doing 160 acres of summerfallow several times, plus 1,100 acres of weed spraying."



\$9 an Acre to Break, Disc, Seed

Anthony Nahuliak, Hodgson, Man., reports: "With Massey-Harris 55 tractor and M-H heavy duty "Goble" disc, worked new land twice in spring, after bulldozing in fall. Then went over with light disc and drag harrow, picked roots and seeded to wheat. Total cost, \$9 an acre, and had crop the first year."



9¼ Acres an Hour . . . 7¢ per Acre

Eugene Kloster of Luseland, Sask., reports: "With our Massey-Harris 55 tractor and 15½-foot wide level disc, we do approximately 9¼ acres an hour, at the very low cost of 7¢ an acre."

80 Acres on 45 Gal. Diesel Fuel

W. J. Melendy, Carseland, Alta., says: "With my Massey-Harris 44 Diesel tractor and 8½-foot One-Way, I did 80 acres on 45 gallons of fuel, I handle my 1¾ sections easily with this tractor. It's the quickest starting tractor I ever saw."



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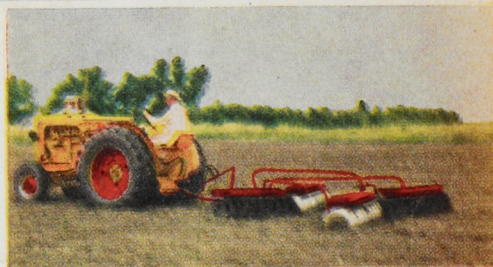
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Versatile, dependable MM Tractors are Visionlined. Four kinds of power; drawbar, belt, power-take-off and hydraulic controls handle a big variety of jobs. Optional Uni-Matic Power offers new safety features, gives the operator hydraulic, one-lever control of mounted or pull-behind tools.

When you team MM Matched Machines with MM Visionlined Tractors you get the most in modern farming. MM Harvestors, Windrowers and the Bale-O-Matic get all the crop quickly, easily, at *lower cost*, with fewer man hours, with less fatigue. MM Wheatland Plows are not only the original one way disc plows, but still the leaders, too.

Here's modern farming the MM way—with Matched Machinery that is built to last, to give you low-cost power to do the job right, to give you machines which use that dependable power for easier, faster, *more profitable farming.* Now is the time to make a sound investment in your future—and MM Modern Machines are built to save you money, **TO MAKE YOU MONEY**, for many years to come. May we suggest that you get facts on MM Tractors, Moline-Monitor Drills, MM Wheatland Disc Plows and MM Harvestors at once.

See your MM Dealer for complete facts or Write today.



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